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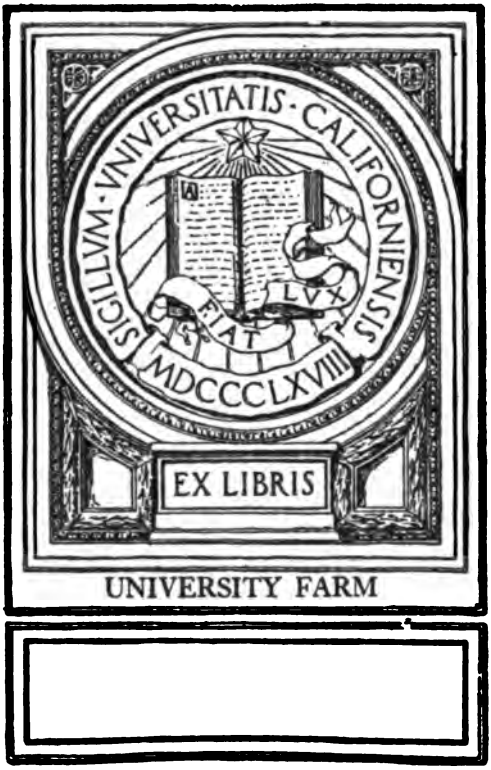

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HOME OF THE LATE MR. FRANK YAHNKE, FROM A PHOTO TAKEN NOT LONG BEFORE HIS DECEASE.
A SHORT DISTANCE SOUTHWEST OF WINONA.
Mr. and Mrs. Frank Yahnke; son, Walter A.; and three daughters. (See page 26.)

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Trees, Fruits and Flowers

—OF—

MINNESOTA.

1909.

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1908, TO DECEMBER 1, 1909, INCLUDING THE TWELVE NUMBERS OF THE "MINNESOTA HORTICULTURIST" FOR 1909.

EDITED BY THE SECRETARY,

A. W. LATHAM,

OFFICE AND LIBRARY, 206 KASOTA BLOCK,

MINNEAPOLIS, MINN.

Official Stenographer, A. G. Long, Excelsior, Minn.

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THE MINNESOTA HORTICULTURIST

Vol. 37 JANUARY, 1909. No. 1

Annual Meeting, 1908, Minnesota State Horticultural Society.

A. W. LATHAM, SECY.

For several years now the writer has prepared for publication a short report of each annually recurring meeting of this society, and necessarily there is something of sameness in these reports as they run along over much the same ground with some few new features. During all this period the meetings have continued for four days each without evening sessions, though for many years one evening has been used for the society banquet.

Without doubt the attendance at these meetings has steadily grown. We have been crowded out of one place of meeting by this increased attendance into another of larger accommodations, until now the auditorium of the First Unitarian Church, in which we have met for several years, has almost reached the limit of accommodations for our purpose.

The interest in the meetings has grown in equal proportion, but as there is no way of measuring this except with superlative adjectives that the continual use of has almost deprived of their original meaning it is hardly possible to convey to the reader in this way the depth and breadth of this interest. It would seem that subjects that are presented annually at these gatherings would cease to attract the attention of the audience, but it must be remembered that these subjects are never run down to a finality—they are always left with a large question mark and are waiting in readiness to be considered again with greater zest than before. As one member said a few minutes ago to the writer, "I had never attended the meeting before and expected to get some good out of it, but was not prepared for the great degree of interest that I took in it. I was loath to be gone from the session a single minute." To those of our readers who have attended our meetings this is easily understood, and others must accept this statement on faith. Come another year yourself, dear fellow member, and

17215

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you will realize more fully the benefit to be secured from your connection with this extremely practical society.

The attendance was at high water mark at the last session, that of Friday afternoon, and instead of dwindling away as many meetings do there were more present at that session than at any other of the meeting except the first session, where we had the benefit of the presence of 100 students from the horticultural department at the State Agricultural College, and in anticipation of whose attendance a special program had been prepared. Probably 300 were present at this session.

In a program including nearly 100 persons, a careful examination shows that there were absent only five. All of these five were unavoidably detained away, and with one exception had sent their contributions to the program. Mr. O. W. Moore, of Spring Valley, was confined to his bed by sickness and unable to perform his part. This is a remarkable showing, and one the society may well be proud of.

The program of the first session, Tuesday morning, was entirely full, as was that of the second session, Tuesday afternoon, though by request one paper was omitted that afternoon and held for publication, there being scarcely time for its presentation.

The Wednesday morning session, given largely to the Plant Breeders', opened with an interesting talk from its president, Mr. J. M. Underwood, followed by reports from the secretary of the Plant Breeders' Auxiliary, Mr. Clarence Wedge, statements of the progress of the fruit breeding farm by its superintendent, Chas. Haralson, etc. The Bee-Keepers' occupied the last hour of that morning and held the audience in an interesting way.

I should speak especially of the program of the Minnesota State Rose Society, which occupied the larger part of the Tuesday afternoon session. Mrs. Ruff, the president, presided and had a very fitting program prepared, with a suitable finale in the exhibition of a "practical garden dress" by Mrs. H. A. Boardman, of St. Paul.

Wednesday afternoon was occupied in part by the Woman's Auxiliary, with a very diversified program, which received close attention from a large audience. At the close of that program for an hour Mr. M. O. Nelson entertained the audience with an illustrated talk on matters "ornamental in horticulture" pertaining largely to improvements about the home.

Thursday morning session was devoted to the annual reports of the various officers, superintendents of trial stations and representatives of auxiliary societies, something like thirty numbers. These reports were made in most cases verbally, and the written reports from

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these officers were only filed for publication and will appear in our monthly. The committee on the "fruit list" reported, and this report was adopted after a brief discussion. Some changes were made of varieties from one list to another, etc., the principal innovations being the addition of the Evelyn to the trial list of apples, and the addition of the Carrie to the list of gooseberries.

Thursday afternoon brought on the annual election of officers, which resulted in the re-election of the president and members of the executive board whose terms had expired, and the treasurer. A new list of nine vice-presidents for the society was presented by the board and elected by the meeting unanimously.

The Forestry Association was the object of special interest at this session, occupying two-thirds of the afternoon. It is impossible to speak in detail of this program, though reference might be made to four short talks by students of the university, all of which were especially well received. In the election of officers Mr. M. O. Nelson, of the Minneapolis Park Board, was chosen president, and the present secretary, E. G. Cheyney, was continued in that office.

Friday morning the general subjects of "orcharding, nursery topics and pruning" were presented. Every minute of this session was occupied to its fullest, and the session ran over into the noon hour some twenty minutes before it found a good stopping place. With one exception every number was present.

Friday afternoon session brings us to the close of the meeting, and for two hours and a half the subject of "spraying in the orchard" was talked about and discussed. Experiences flashed back and forth amongst the members, and even then they were loath to pass on to the final topic of the meeting. At that late hour "top-working" received hardly the attention it deserved, but the two papers on this subject, reciting the experience of years, were carefully followed and briefly discussed.

The closing exercises brought about forty members to their feet in two-minute speeches. Mr. Jayne sang us a closing song, and the president declared the meeting adjourned. There was a large audience there at the final adjournment, and they were still loath to go.

There were many features of the meeting of special interest that have not been referred to as yet, and they are worthy of mention at this time, though it must be brief.

Tuesday afternoon session was introduced by a question exercise on "evergreens" by Mr. Clarence Wedge, who exhibited a large number of specimens of small sizes of different evergreens neatly arranged

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for display. Too much cannot be said of the interest this exercise excited.

The last item of that afternoon's program was an article on "cranberry culture in Minnesota", which Prof. Franklin, of the Agricultural College, had taken pains to prepare in a terse and practical manner. After reading it was very interestingly illustrated by the use of a large number of lantern slides, which assisted materially in fastening the subject in the mind. Two or three of these illustrations may appear with the printed article, but the seeing of these views is one of the things the members must get along without who were not present at the meeting. Immediately following this, Prof. Green exhibited a number of interesting photographs of the state fruit breeding farm and also from Itasca State Park and the Forestry School maintained there.

Wednesday morning's session opened by a half-hour exercise conducted by Prof. Green on "growing new fruits". You ought to have been there to have got the benefit of this. The reporter tried to get all this matter, with what success will appear in our numbers later. Just before the afternoon program, Prof. Harry Snyder, of the State Agricultural College, conducted a half-hour demonstration exercise on soils adapted to fruits, etc. As a means of impressing his lessons upon the audience he had a number of specimens of soils in glass jars, and some chemical operations were performed to emphasize his remarks.

Thursday morning the oldest strawberry grower in our society, Geo. J. Kellogg, conducted a question exercise on "strawberries" for a half hour before the meeting, and then the members didn't want to quit and had ten or fifteen minutes more, and we heard afterwards that some of those who were present had still a few questions they wanted to ask. That should bring them to the meeting again, when there will be further opportunity.

Thursday afternoon the first exercise, from 1:30 to 2:00, on "cross-fertilization of fruit flowers", was conducted by J. L. Ware, an assistant at the State Experiment Station. Models and tools for this purpose were at hand, and a great number took advantage of this practical lesson, some of whom we believe will put it to use during the coming blossoming season by making hand crosses in their fruit flowers, and later growing seedling fruits that mature from these hand crosses, which is the most practical way of originating good varieties of new fruits.

Preceding the Friday morning session, a half hour exercise on "plums for general cultivation" was led by Mr. Dewain Cook and excited large interest. The last session of Friday was begun by a half

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hour "demonstration in spraying" by Mr. A. R. Kohler, another assistant in the horticultural department. Different spraying mixtures were prepared before the eyes of the audience and a great deal of information brought out on the subject, some of it directly from Mr. Kohler and other information in reply to questions. Later A. Brackett, of Excelsior, gave another somewhat similar exercise in preparing spraying mixtures.

A description of the work of the week would be incomplete without reference to the "school of grafting," which was maintained in the fruit room from 1:00 to 2:00 o'clock of each day, conducted by two of the assistants from the School of Agriculture, Mr. LeRoy Cady and Mr. A. R. Kohler. It seems surprising that members who are so well informed on the subject of grafting, as many of our members are, should be the ones that are especially interested in this subject. and the crowds that stood around these two instructors during the hour and had to be driven away finally to stop the exercise, was one of the most interesting facts noted at the meeting. Many novices, however, received their first lesson in grafting, and so popular were these exercises that it would seem that they should be indefinitely continued at our annual gatherings.

Only the briefest reference has been made to different features of the program, but what it was in detail can be learned more by reading with care the papers and discussions that appeared at the meeting as they are to be found in the various issues of the society monthly throughout the year. You get the most of it in this way, but the element of personal contact, the grasp of the hand, and the flash of the eye, and, in a way, the wonderful good feeling that prevails, can only be understood by those in actual presence. The meeting moved along without a jar, Prof. Green in his inimitable way as presiding officer making every one feel that his was the important part in the exercises, and that it was being satisfactorily done—and the little help that the professor could put in as the program progressed added very much to its practical value.

We hated to part with all of these good friends even for a day, but at last the meeting came to a close and goodbys were said with those whom we may meet again a year hence or perhaps not this side of the golden shore.

So many contributed to the success of this meeting in the way of assistance on the reception committee and ushers, whose services were without special compensation, assistants in various departments, judges, etc., that to mention names would be almost invidious and practically

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out of the question. We thank you all, dear friends, for this valuable assistance. The hall was neatly decorated something as heretofore, though there were more signs to hang on the walls expressing the thought of our membership. One new one over the speaker's stand read, "Make the tree good and its fruit good," and marks the high resolve of the members of the Minnesota State Horticultural Society.

As every one knows, the past was an unfortunate year with the orchardists. A number of causes contributed to this, but the practical results were shown in the comparatively light exhibit of fruit at the annual meeting. There was a fair showing, however, in every class, and while the fruit was a little thin on some of the tables the hall as a whole looked as attractive as at any time heretofore, and the premiums awarded, amounting to over $300.00, will show that the society was not the gainer financially by this comparatively light exhibit.

The visitors in attendance added ever so much to the interest. Col. C. W. Gurney of Yankton, S. D., represented the South Dakota Society; Mr. C. L. Richardson, of Chippewa Falls, Wis., stood in place of the Wisconsin Society; Mr. G. D. Black, of Independence, Ia., represented the Northeastern Iowa Society; Dr. H. M. Speechly, of Pilot Mound, Man., the Manitoba Society and C. S. Harrison of York, Nebr., the Nebraska Society. All of these friends placed us under obligation by the important parts they occupied on the program, and we are especially glad that they were made to feel at home with us and participated freely in the discussions. Of course there were others present from abroad. What could we do without Kellogg and Philips of Wisconsin, Patten and Gardner from Iowa? There would be something wrong with us, and no one to set it right without the presence of these old friends.

The annual banquet—what shall we say of this? It is the occasion of renewal of good fellowship, breaking bread together with those we know well and wish to know better. One hundred twenty-seven sat down to this annual feast, and we wish there might have been more, for the good things that were said and the good things that were eaten as well as the entertaining songs and bright readings altogether gave us a three hours' charming entertainment. This is one of the brightest features in the memory of the annual gathering. The program for the banquet is as follows:

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Toastmaster.....PROF. HARRY SNYDER, St. Anthony Park.
Grace .....GEO. J. KELLOGG, Lake Mills, Wis.

"SOME DOINGS"

'Ware the "Chestnut" bell

1. Song..... MINNESOTA QUARTETTE
2. A Crimson Rambler—what is Smith going to do with us? .....E. A. SMITH, Lake City
3. Reading.....MISS ALICE RUTH O'CONNELL, Mpls.
4. Keep the boys on the farm—if you have to spike 'em down .....R. A. SCHUTZ, LeRoy
5. Song.....TRAFFORD N. JAYNE, Mpls.
6. Song .....MINNESOTA QUARTETTE
7. Horticulture a "health cure," administered muscle-pathically to attorneys and others—I have tried it.....GEO. S. GRIMES, Mpls.
8. Gardens are green—even in the Northland .....DR. H. M. SPEECHLY, Pilot Mound, Man.
9. Reading.....MISS ALICE RUTH O'CONNELL
10. The true horticulturist a true patriot....LEVI LONGFELLOW, Mpls.
11. Closing Song.....MINNESOTA QUARTETTE

Ye toastmaster sayeth good night.

Award of Premiums, Annual Meeting, 1908, Minnesota State Horticultural Society.

GRAPES.

Agawam	Gust Johnson, Excelsior	First	$0.75
Aminia	"	First	.75
Iona	"	First	.75
Woodruff Red	"	First	.75
Worden	"	Second	.50
Rocklington	"	Second	.50
Cottage	"	Second	.50
Martha	"	Second	.50
Moore's Early	"	Second	.50
Delaware	"	First	.75
Duchess	"	First	.75
Lindley	"	First	.75
Herbert	"	First	.75
Brighton	"	First	.75
Wilder	"	First	.75
Moore's Diamond	"	First	.75
Campbell's Early	"	First	.75
Niagara	"	First	.75
Concord	"	First	.75
Jewel	"	Second	.50
Amber	"	Second	.50
Ulster	"	First	.75
Rockwood	"	Second	.50
Salem	"	First	.75
Elvira	"	Second	.50
Perkins	"	First	.75
Brilliant	"	First	.75
Catawba	"	First	.75
Hungarian	Frank Stifter, Cokato	First	.75

A. BRACKETT, Judge.

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APPLES, SINGLE PLATES.

Wolf River	Gust Johnson, Excelsior	Third	$0.30
Patten's Greening	"	Second	.40
Repka Malenka	"	First	.50
Longfield	"	First	.50
Peter	"	Third	.30
Anisim	"	First	.50
Salome	"	Second	.40
Wealthy	"	Third	.30
Utter	"	First	.50
McMahon	"	Third	.30
N. W. Greening	J. O. Weld, Mound	Fourth	.20
Wealthy	"	Fourth	.20
Anisim	Thos. Redpath, Wayzata	Fourth	.20
Brett	"	First	.50
Borovinca	"	Second	.40
Charlamoff	"	Fourth	.20
Hibernal	"	Third	.30
Jewell's Winter	"	First	.50
Jewell's Sweet	"	First	.50
Longfield	"	Fourth	.20
Malinda	"	First	.50
McMahon	"	Second	.40
Okabena	"	Fourth	.20
Patten's Greening	"	Fourth	.20
Peerless	"	Second	.40
Peter	"	Second	.40
University	"	First	.50
Gideon	A. Wilwerding, Freeport	First	.50
Malinda	"	Second	.40
Charlamoff	"	Third	.30
Ben Davis	Walter A. Yahnke, Winona	First	.50
Brett	"	Third	.30
Gilbert	"	Second	.40
Golden Russet	"	Second	.40
Grundy	"	Second	.40
Haas	"	Second	.40
Hutchins	"	Second	.40
Lord's L.	"	First	.50
Newell's	"	Second	.40
Plumb's Cider	"	Second	.40
Rollin's Prolific	"	Second	.40
St. Lawrence	"	Second	.40
Scott's Winter	"	Second	.40
Sugar Loaf	"	First	.50
Utter	"	Second	.40
Walbridge	"	First	.50
Yahnke	"	First	.50
Duchess	"	Second	.40
Hibernal	"	Fourth	.20
Longfield	"	Third	.30
N. W. Greening	"	First	.50
Okabena	"	First	.50
Peerless	"	First	.50
Wolf River	"	First	.50
Wealthy	S. R. Spates, Wayzata	First	.50
Peter	"	Fourth	.20
Charlamoff	"	First	.50
Duchess	"	First	.50
Borovinca	"	First	.50
Anisim	"	Third	.30
N. W. Greening	"	Third	.30
McMahon	E. F. Pabody, Minneapolis	First	.50
Duchess	Carl F. Steller, Excelsior	Fourth	.20
N. W. Greening	"	Second	.40
Jewell's Sweet	J. A. Howard, Hammond	Second	.40
Anis	"	First	.50
Anisim	"	Second	.40
Ben Davis	"	Second	.40
Brett	"	Second	.40
Borovinca	"	Third	.30
Cross	"	First	.50
Christmas	"	First	.50
Fameuse	"	First	.50
Forsburg	"	First	.50
Gideon	"	Second	.40
Giant Swaar	"	First	.50
Gilbert	"	First	.50
Golden Russet	"	First	.50
Grundy	"	First	.50

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Haas	"	First	.50
Hutchins	"	First	.50
Iowa Beauty	"	First	.50
Jewell's Winter	"	Second	.40
Judson	"	First	.50
Lord's L	"	Second	.40
Malinda	"	Fourth	.20
Newell's	"	First	.50
Peach	"	First	.50
Plumb's Cider	"	First	.50
Rollin's Prolific	"	First	.50
Repka M.	"	Second	.40
St. Lawrence	"	First	.50
Scott's Winter	"	First	.50
Sugar Loaf	"	Second	.40
Superb	"	First	.50
Tetofsky	"	First	.50
Utter	"	Third	.30
White Pigeon	"	First	.50
Walbridge	"	Second	.40
Yahnke	"	Second	.40
Yellow Sweet	"	First	.50
Charlamoff	"	Second	.40
Duchess	"	Third	.30
Hibernal	"	Second	.40
Longfield	"	Second	.40
McMahon	"	Fourth	.20
Okabena	"	Third	.30
Patten's Greening	"	First	.50
Peter	"	First	.50
Peerless	"	Third	.30
Wealthy	"	Second	.40
Wolf River	"	Second	.40
Nelson	"	First	.50
Salome	"	First	.50
Radiant	"	First	.50
Peerless	J. F. Benjamin, Hutchinson	Fourth	.20
Malinda	"	Third	.30
Hibernal	"	First	.50
Patten's Greening	"	Third	.30
Okabena	"	Second	.40

GEO. W. STRAND, Judge.

PECKS OF APPLES.

Fifty dollars divided pro rata.

Wealthy	Gust Johnson, Minneapolis	$4.91
Peter	"	4.91
Wealthy	Thos. Redpath, Wayzata	4.90
Malinda	"	4.10
N. W. Greening	Walter A. Yahnke, Winona	5.19
N. W. Greening	S. R. Spates, Wayzata	4.91
Wealthy	J. A. Howard, Hammond	4.38
Patten's Greening	"	4.10
Sugar Loaf	Walter A. Yahnke, Winona	3.28
N. W. Greening	J. A. Howard, Hammond	4.38
Victoria	G. A. Anderson, Renville	4.94

R. A. WRIGHT, Judge.

BUSHEL BOXES OF APPLES.

Twenty-five dollars divided pro rata.

Wealthy	Gust Johnson, Minneapolis	$7.90
Wealthy	Thos. Redpath, Wayzata	8.33
Wealthy	J. A. Howard, Hammond	8.77

R. A. WRIGHT, Judge.

COLLECTIONS OF APPLES.

Twenty dollars divided pro rata.

Gust Johnson, Minneapolis	$3.80
A. Wilwerding, Freeport	3.80
Walter A. Yahnke, Winona	4.45
S. R. Spates, Wayzata	3.30
J. A. Howard, Hammond	4.65

GEO. W. STRAND, Judge.

COLLECTIONS TOP-WORKED APPLES.

Twenty-five dollars divided pro rata.

S. H. Kenney, Waterville	Second	8.00
J. A. Howard, Hammond	First	17.00

C. E. OLDER, Judge.

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EARLY WINTER SEEDLING APPLES.

Forty dollars divided pro rata.

Unnamed	Thos. Redpath, Wayzata	$6.51
No. 5	T. E. Perkins, Red Wing	6.51
No. 20-a	"	7.34
No. 54	"	7.51
No. 1	J. A. Howard, Hammond	7.09
No. 2	"	5.04

WYMAN ELLIOT,
CLARENCE WEDGE,
Judges.

LATE WINTER SEEDLING APPLES.

Seventy-five dollars divided pro rata.

No. 2	W. A. Yahnke, Winona	$7.85
Gem City	A. D. Brown, Baraboo, Wis.	8.83
No. 12	A. B. Lyman, Excelsior	8.63
No. 21	"	8.14
No. 101	"	7.65
No. 200	"	8.83
No. 72	T. E. Perkins, Red Wing	9.36
Unnamed	G. A. Anderson, Renville	8.34
Unnamed	Jos. Lorence, Minneapolis	7.37

WYMAN ELLIOT,
CLARENCE WEDGE,
Judges.

NUTS.

Walnuts	D. T. Wheaton, Morris	First	$0.50
Butternuts	"	First	.50
Hickory	F. I. Harris, La Crescent	First	.50
Butternut	Frank Stifter, Cokato	Second	.40

GEO. W. STRAND, Judge.

President's Address at Annual Meeting.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

Our annual convention draws us together to discuss horticultural subjects, and to have the pleasure of meeting those who are co-laborers with us in a field that has in it much that is altruistic and beautiful as well as useful. It gives me great pleasure to congratulate you upon the success of our organization and the great benefits which have come to the state through your efforts. The utmost good feeling and harmony seems to prevail throughout the society, which never had a larger membership and was never in better condition financially nor more helpful, and all this promises well for the best continuation of our work. Our membership is now 2812.

Personally, I have thoroughly enjoyed my association with the officers and members of this society during the past year and have found the work of acting as your presiding officer one of great interest and entirely free from anything arduous. It is certainly a great pleasure to be travelling through life in such good company.

As has been the custom of our society in former years, it has extended encouragement to ten local societies within the state and to one society outside of the state that wished to affiliate with us. It has given special assistance to the forestry association in the effort to encourage the placing of this important source of wealth in a proper light before the citizens of this section. It has also encouraged the in-

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dustrial contests that have been held in various portions of the state, by offering premiums for horticultural products, and these contests are doing a grand work in stimulating an intelligent interest in rural life among the country children.

Industrial Contests.—Perhaps a word of explanation in regard to these industrial contests is not out of place here. This is work that had its origin at University Farm, and its purpose is to arouse an interest in agriculture by offering premiums to the school children for the country products they may grow or for work in sewing and cooking.

As an example of such work let me cite the following: At a recent exhibition of this kind held in Rochester, confined entirely to exhibits by students of the public schools of Olmstead County, there were 470 prizes offered (exclusive of cooking and sewing), making a total of $560, and nearly all of them were taken. The money for these prizes was raised in Olmstead County. The entries were as follows: Apples, 51 plates; late potatoes, 62; early potatoes, 17; onions, 18; wheat, 38; oats, 45; corn, 154; ax handles, made by students, 20.

During the two days in which this exhibit was carried on, the large hall in which it was held at Rochester was well filled. There must have been an attendance of twelve or fifteen hundred people.

The following is an account of a similar contest held in McLeod County in 1908:

Entries	No.	Prizes.	Aggregating
Corn	109	6	$28.00
Wheat	36	6	27.00
Oats	30	6	27.00
Cooking, (7 classes) prizes in nursery stock	40		
Sewing, (14 classes)	216	28	61.50
Vegetables,	210	9	9.00
Fruit, prizes in nursery stock	148	17	
Tall corn	20	1 Plymouth cockerel	

All premiums were cheerfully donated by the business men.

The contest was held in the Contest Building at the McLeod County Fair, and was visited by the majority of those who attended the fair. Please note that this county has a special building for school exhibits.

Later on, the six best products in each line from every county taking part in this industrial contest work will be exhibited at the general round-up contest, to be held at the University Farm this winter.

By this method we get the children interested in country life, and, as a matter of fact, their enthusiasm and interest arouses the interest of their parents. It is a good work and should be extended.

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Forestry—Forestry is a subject that our association has fostered for many years. It is really a great branch of learning by itself that is of much economic importance. It is to be hoped that the people of this section will soon awake to its importance and properly develop this great source of wealth, which now is almost totally undeveloped, due to the lack of a proper appreciation of the subject among our people.

Minnesota early provided for the encouragement of prairie planting by a bonus provided for by a special tax levy, and under the provisions of this law has paid out over $700,000. It is probable that this bonus failed to have any appreciable effect on prairie planting many years ago. The afforested area, from which the state has derived such an enormous amount of money, has received little or no encouragement at the hands of the state. The time has certainly come when this great source of wealth should have careful attention. This is a great and intricate problem, and its very difficulties have discouraged many from taking hold of it. The probably greatly decreased revenue from this source within a short time, unless it is properly cared for, should impress upon our people the importance of making the necessary provision for its development.

What we need now more than anything else for the proper development of our forests is the education of trained foresters, and the forthcoming legislature should see to it that this is liberally provided for. Among the encouraging signs in regard to this matter is the fact that a summer school of forestry has been provided for in Itasca Park, that eighteen students attended its course last summer, and that seventy students are now in attendance in the forestry course of the State University.

The state should provide opportunity for the employment of these young men in its forests, since these forests need their labor, and the students need just the experience they would get in this work. These young men would also prove especially valuable as fire patrols at times when fires are most liable to be troublesome. There can be no question but what the best way of putting a reform measure of this kind on the best basis is by properly educating the young man.

State Fruit Farm.—One year ago I had the pleasure of congratulating you upon the successful outcome of our efforts to secure a fruit breeding farm where, profiting by the experience of many horticulturists in the production of new fruits, the work could be taken up systematically and upon a scale commensurate with its importance. I reported to you that seventy-eight acres of land had been purchased for this purpose, located near Zumbra Heights Station, on the M. & St.

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L. Ry., in Carver County, and that it was well adapted to plant breeding purposes.

Since then we have completed a small dwelling house with greenhouse attached, a storage cellar 30x50, a barn 30x40 with wagon shed, a 6-in. tubular well with water system, and have laid drain tile to the amount of nearly 9,000 feet to drain some spots that we found to be too wet in the spring of the year for best crop growing, and we have raised this year perhaps 100,000 seedlings of various kinds. These matters have been reported on in detail by Mr. Chas. Haralson, the superintendent, who has given us faithful and energetic service.

I feel that the establishment of this fruit breeding farm marks a new era in horticultural progress in this section, and that it is destined to have an important bearing upon the future of horticulture here. The varieties of fruit now grown in this section are largely the result of individual effort in an unexplored field, and it would seem as if, with the knowledge we have now acquired of the possibilities of this field and the best way to continue explorations in it, that, profiting by the experience of the past, we should be able to achieve important results in a comparatively short time.

It should be well understood, however, that the establishment of the fruit farm will not take the place of individual effort in originating new fruits; but, on the contrary, it is the hope of those who are in charge of this work that it will act as a stimulus to individual enterprise in the same field of endeavor.

Horticultural Work at University Farm.—By the establishment of the fruit breeding farm at Zumbra Heights we have found opportunity for the expansion of our fruit breeding interests, which were formerly grouped together in a congested way at the University Farm. We intend in the future to carry on all the fruit breeding work at Zumbra Heights, thus giving better opportunity for other horticultural work at University Farm. This has some disadvantages for visitors, but we believe will make for general progress and efficiency.

During the past year special attention has been paid to the study of florists' flowers, vegetable gardening and potato growing. In the development of the campus very decided improvements have been made. There is not opportunity to refer to these matters in detail here.

The number of students in attendance at the Agricultural Department of the University has increased very much, as shown by the following attendance for last year:

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School,	580
Farmers' Short Course	141
Dairy School,	93
College Course,	116
Total in Department of Agriculture, less 6 duplicates	924
Teachers' Summer School	90
Summer Forestry School	18
Total	1032
Attendance to November 23rd, 1908:	
School	572
College	180
Dairy School	97
Total	849

Special growth in the Agricultural Department is noted in the forestry courses, which now has an attendance of over seventy students.

The Nursery Business.—The proper development of the nursery business in this and adjoining states has had a very decided influence upon the horticulture of this section. It is largely through the men managing these concerns that the horticultural work of the state must be promoted. Such work is an important one and destined to have a very far reaching effect upon the rural life of this community. Our nurserymen as a whole are alive to the importance of the great work that they are doing and mean to make it helpful and reliable. They look upon the fruit industry as something that has come to stay, with which they expect to be identified and with the success of which is linked their own interests.

The nursery business within the state of Minnesota has increased enormously within a few years. No accurate statistics have been taken of the value of the plant or the product, but from some figures that I have got together I am disposed to think that probably the total investment in the state by the different nurseries aggregates about $1,000,000, that the annual sales amount to $1,000,000, and that they give employment to 1,000 persons for twelve months each in the nursery, and that 600 persons are employed as salesmen.

Spraying.—There can be no question but what it is important for our horticulturists to pay more attention than at present to the subject of spraying their crops to protect them from injuries. As the result of careful experiments in various places, the information available on this subject is now in such shape that the subject of spraying plants can be treated with much certainty. I feel that this matter should receive more attention at the hands of our horticulturists.

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Varieties of Fruits.—In the development of a system of horticulture of our own that is adapted to the peculiar conditions of this section, we have had, and are destined to have, a large number of varieties sent out by the various nursery concerns for trial. It should, however, be more clearly understood by the man who is planting for commercial purposes that in order to be most successful he should confine his plantings largely to a few varieties, as in this way he can handle his products to best advantage in marketing. However, I do not think that the horticulturist shows the proper amount of enterprise who is not willing to try those new varieties of fruits that come to him well recommended; but he should do so in a very conservative way, so that the risk from so doing will be reduced to a minimum.

Horticulture at the State Fair.—Our State Agricultural Society has been carefully managed until its exhibitions are visited by hundreds of thousands of people and are in reality great expositions of the agricultural wealth of this section. The exhibit of horticultural products at the fair is always good, and perhaps the state invests no money that brings in greater returns indirectly than that which it puts into encouraging the horticultural portion of this exhibit. The county exhibits are also of great importance, and the counties are not nearly so well represented as they should be, nor will the present accommodations take care of a larger number. The exhibits of flowers and other florists' stock are only fair, and there has never been opportunity to make as good a display in this line as is desired.

With the increase of wealth and refinement there has come an increased demand for the things that make for the beautiful, and our people will continue to have more time for interests of this sort. In a former address, I referred to the development of the florist's business as being something of an index of the development of the refinements of society. In a general way I wish to reiterate that statement.

It seems to me that the legislature should be urged to provide proper exhibition space for horticulture and agriculture at the state fair.

In conclusion, I want to congratuate you that so much of what we have hoped for has become the realization of the thing done.

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OFFICIAL REPORTS.

Annual Report, Executive Board, 1908.

WYMAN ELLIOT, CHAIRMAN.

The meetings of the board the past year have been but few and always very harmonious.

The board made an appropriation of not to exceed $10 for the purchase of nursery stock for each of our trial stations with the proviso that each list for stock applied for should be first submitted for approval to Prof. S. B. Green, of the Central Station.

Two new trial stations were created, one with Rev. John B. Katzner, at Collegeville, and the other at Seth H. Kenney's, at Waterville.

The secretary's financial accounts have been examined twice during the year, just before the annual meeting and just before the summer meeting, by Prof. J. M. Drew, accountant at the Agricultural School, and found correct.

The board made an appropriation to the Gideon Memorial Fund of Two Hundred Fifteen and 7-100 Dollars to bring the total amount of that fund up to Five Hundred Dollars, and this amount has been deposited with the Board of Regents of the State University, the interest thereon to be used to encourage scholars in the agricultural school by the offering of prizes. Other amounts can and should be donated for this purpose by philanthropic horticulturists.

A suitable fireproof storage for our surplus horticultural reports was needed, and now arrangements have been made to transfer them from Pillsbury Hall to the new main building at the agricultural school, where they will be safe from fire.

Three hundred dollars was appropriated by the board to help issue during 1908 the Minnesota Forester, a monthly journal published for the encouragement of forest education, and to help develop some practical system of fire protection for our state parks and forests.

Our horticultural work is very progressive and our circle of usefulness is broadening each year by the increasing number of our membership, which now amounts to over 2,600 annual members and of life members more than 200. This is very largely being brought about by the efficient and systematic methods pursued in presenting to the public the necessity of extending our horticultural work along practical lines for the good of humanity by our worthy secretary, untiringly assisted by an earnest membership.

The board are very much pleased with the prospective outlook at our new Fruit Breeding Farm, and the splendid progress that has been made in putting up new buildings, an up-to-date frost proof tree stor-

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age cellar, and planting out in the grounds many thousand seedling fruits for experimentation.

The new horticultural extension work at Duluth as an auxiliary movement for that part of the state it is thought will be of great advantage in extending this society's usefulness in horticultural and forestry education.

Looking back over the forty-two years of our horticultural existence as a society and comparing our first efforts with those of the present time, we think our members and other citizens of our state should feel that we have not labored in vain for the betterment and upbuilding of mankind.

Secretary's Annual Report, 1908.

A. W. LATHAM, SEC'Y.

The society year which closes with this annual meeting finds the organization of which I have the honor to be secretary in an eminently satisfactory condition, not only in its membership and in all of its various branches of service, including trial stations, auxiliary societies, etc., but especially so in the spirit which actuates its membership and makes it possible to achieve practical and far reaching results.

This year has brought to the society at least two strong auxiliary societies, the Minnesota State Bee-Keepers' Society and the Northeastern Minnesota Horticultural Society, the latter located at Duluth. It is interesting to note that nearly all of the kindred societies of the state have now become auxiliary to this society, giving it far greater strength and assisting also materially these other organizations in their efforts. A full list of auxiliary societies and membership for the year 1908 is as follows:

Southern Minnesota Horticultural Society, 67 members.
Minnesota State Bee-Keepers' Society, 46 members.
Minnesota State Rose Society, 97 members.
Kandiyohi County Horticultural Society, 33 members.
Minnesota State Forestry Association, 44 members.
Rock County Horticultural Society, 13 members.
Red River Valley Horticultural Society, 25 members.
Northeastern Minnesota Horticultural Society, 18 members.

To this list must be added also the North Dakota State Horticultural Society, 183 members, which we are still carrying on our roll and purpose so to do until that society becomes self sustaining through the probable medium of assistance from the legislature of that state. No special effort has been made to secure the organization of any of

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these auxiliary societies, but they have come to us by natural process of growth, and are generally located where there is an apparent need of such an organization which would insure its continuance.

The total annual membership of our society for this year is 2,598. To this must be added the life memberships amounting to 212, making a total of 2,810 members, not including in this a number of honorary annual members.

To take care of this large membership of over 2,800, including the magazines that are to be sent to them, we have printed in all 5,000 issues, part of which are bound up as magazines and the rest as annual reports. Last year there were 2,600 bound in the form of annual reports, which was something like 200 less than the membership, to say nothing of a certain number that must be reserved for future use and at least 100 needed in the way of exchanges with other societies—so that this year we have been unable to furnish all of our memberships with the annual report, and along the latter part of the year have sent such reports only when personal request was made for them. Many do not care particularly for the volume, having had the magazine, and we have been able to supply all who have made the request.

There have been two trial stations added to the list, making nine in all, and for their encouragement and advantage an appropriation of $10 was made to each station, available for the purchase of experimental stock under certain conditions. Only two stations, however, took advantage of this offer. All of them, I believe, have made valuable reports during the year, and with the exception of Mr. J. S. Parks, who is confined at home by a lingering illness, will probably be represented in some way at this meeting.

We have been fortunate in the matter of losses by death during the current year, and the only names that occur to me now with which as a working organization we are familiar are those of Mrs. Jacob S. Manning, an honorary life member, who passed away early in the year at her home in Reading, Mass.; and Mr. Nils Anderson, of Lake City, who was with us in excellent health and spirits during the state fair, but was killed by an accident shortly after his return home.

In securing our increasing membership we have as usual been aided very materially by the lecturers on horticulture at the Farmers' Institutes, Mr. A. Brackett sending in during the season 197 memberships; Mr. R. A. Schutz, 265; Mr. F. B. McLeran, 91; Mr. Forest Henry, 59; and W. W. P. McConnell, 17. These variant figures represent varying periods of service and are not to be taken as representa-

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tive of the zeal or earnestness of the lecturer. All of these servants of the society have willingly and earnestly endeavored to advance the interests of the association as well as furnish solid instruction in horticultural matters to the planters throughout the state.

In the matter of assistance in the increase of membership others should be spoken of aside from those above named, but as their number is large, representing a comparatively small increase from each person, it would be impracticable to mention them here. The nurserymen in the state, who have used the society folder very largely in their correspondence, have sent in the neighborhood of seventy-five members as their contribution. In all some 40,000 folders were printed, enough to supply all demands which were made upon us for them.

The society library and office show some changes made during the year. Two cases have been added to the library and plenty of reports from other societies and books of reference, to the number of 102, have come in to more than fill them. We are again facing the proposition that our accommodations are too small.

Card indexes for the society library have been completed; also one including practically all the bulletins on horticulture issued by the various experiment stations of the country; and one other, which we consider especially valuable in that it is an index of all the articles that have been published in all the reports issued by this society, this index including not only the titles of articles but also the names of their authors. With these very complete and convenient indexes it is possible to investigate easily almost any subject that it may be desired to look up in the society library.

In the working books of the society, besides the membership rolls and the alphabetical mailing list, which have been used now for many years, we have also a postoffice mailing list, indicating what members live at each postoffice, so that if any of the members wish to know who are fellow members in the neighborhoods where they live, that information can be furnished promptly from the secretary's office.

Some additional entries have been made in connection with the prizes for seedling fruits offered by the society: none in the case of the $1,000 prize, nineteen in the case of the $100 prizes offered, and two or three in connection with Mr. Loring's offer of $100 for a seedling plum We hope for a large number of entries the coming season, especially in connection with the seven $100 apple seedling prizes now being offered by the society. There should be several hundred more entries for these prizes, and they might be profitably made, as the results are

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almost certain to give something of benefit and interest to the experimenters.

A comparatively large number of premium books have gone out in connection with the securing of new members this year, to the amount of $217.52. Amateur Fruit Growing is more called for than any other, and about 700 copies of this book have been sent out as premiums from this office during the past year. A full list of these premium books is published in the society folder. These books have been sold also to the amount of $61.45.

While the society has been prospering, not less has the state prospered as a whole in horticultural advancement. The light fruit crop this year, to be accounted for largely from the heavy fruitage of the year before, has not turned as much profit into the pockets of the fruit growers as they would probably have liked, but the comparatively high prices have made up in large measure for this. The prospects for another year, however, are most excellent, and the phenomenal plantings of nursery stock all over the state continue in amount probably beyond the thought of those who have not given this subject consideration. Judging somewhat from the sales of a few of the larger nurseries, it is more than probable that upwards of a million dollars worth of nursery stock was planted in Minnesota the past year.

A word might be said of the movement at our state fair to secure larger accommodations for the horticultural exhibit annually made there, and it is amongst the probabilities that the entire agricultural building may be turned over the current year to pomology and floriculture. Then indeed will the Minnesota horticulturist be in his glory and will have an opportunity to show to those abroad who visit our state fair what can be done when opportunity and zeal for service are combined. We intend in that event to keep up the high credit of the interests the society represents.

Plant premiums have been sent out to 800 members the past year, and as each received two premiums the total number sent was 1,600.

I have the honor to submit herewith the financial statement of the affairs of the society, which will be found in an equally gratifying condition with the other departments of its work:

FINANCIAL STATEMENT, 1908.

RECEIPTS OF SECRETARY'S OFFICE.

Balance	$ 554.12
Annual membership fees, 1907	3.00
Annual membership fees, 1908	2,429.00
Annual membership fees, 1909	217.00

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Life membership fees	191.00
Advertisements	258.75
Books sold	61.45
Postage from N. D. Hort. Society	28.05
Half-tones sold	10.15
State Fair	20.00
Interest received from treasurer	90.00
Sundries	12.62
Total	$3,875.14

EXPENDITURES OF SECRETARY'S OFFICE.

Postage	$ 550.53
Express	44.07
Printing	154.99
Telephone	34.35
Gas	2.82
Assistance in office	385.75
Library	7.70
Premium books	217.52
Plant premiums	44.92
Office rent	240.00
Reporting annual meeting, 1907	166.20
Expenses annual meeting, 1907	196.86
Expenses summer meeting, 1908	4.25
Expenses annual meeting, 1909	8.64
Forestry Association	255.50
Expenses, delegates	129.57
Expenses, executive board	36.66
Insurance	8.00
Discounts on membership fees	422.75
Assistant librarian	15.00
Webb fund	24.75
Society treasurer	142.41
Expenses vice-presidents	8.45
Expenses trial stations	45.06
Office furniture	22.00
Office supplies	39.76
Premiums Children's Industrial Contest	70.00
Expenses society banquet	38.97
Secretary's and treasurer's bonds	21.00
Rent of church for annual meeting	75.00
Treasurer's salary	25.00
Sundries	62.33
Balance	374.33
Total	$3,875.14

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GENERAL STATEMENT.

Deposited in Hennepin Co. Savings Bank	$1,383.38
Interest to Oct. 1, 1908	49.05
Total	$1,432.42
Balance in society treasury	$4,060.68
Balance in hands of secretary	374.33
Total Society funds	$5,867.43

Annual Report, Treasurer, 1908.

Geo. W. Strand, Taylor's Falls.

RECEIPTS.

1907—		
Nov. 29,	To balance	$3,130.59
Dec. 2.	A. W. Latham, receipts secretary's office, June 25, '07, to Dec. 2, '07	558.79
Dec. 16.	A. W. Latham, receipts secretary's office	142.41
1908—		
Feb. 15.	State Treasurer, semi-annual allowance	1,250.00
June 22.	A. W. Latham, receipts secretary's office from Dec. 2, '07 to June 20, 08	2,787.00
Aug. 4.	A. W. Latham, Secy., "Gideon Memorial Fund"	284.93
Aug. 15.	State Treasurer, semi-annual allowance	1,250.00
	Total Receipts	$9,404.40

DISBURSEMENTS.

1907—		
Dec. 2.	A. W. Latham, expenditures secretary's office, June 25 to Nov. 26, 1907	558.79
1908—		
May 2.	A. W. Latham, 1st quarter salary	375.00
June 1.	A. W. Latham, 2nd quarter salary	375.00
June 22.	Premiums annual meeting, 1907	273.00
June 22.	Exp. Secretary's office, Nov. 26 to June 20, 1907	2,787.68
Sept. 1.	A. W. Latham, 3rd quarter salary	375.00
Oct. 14.	Board of Regents, State University, "Gideon Memorial Fund"	500.00
Dec. 1.	Premiums Summer meeting, 1908	99.25
	Balance on hand	4,060.68
	Total Disbursements	$9,404.40

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The Development of Commercial Orcharding in Fillmore County.

C. E. SNYDER, PRESTON.

The first nursery stock grown in the state of Minnesota was planted in Fillmore County, at Forestville, by Barnett Taylor, in 1858. That was the beginning of the Forestville Nursery, which furnished and made a great many home orchards in our county. Some of the oldest commercial orchards were also started by Mr. Taylor, notably those of one thousand trees set for Mr. George Barr, in 1865; D. K. Michener, five hundred, in 1868; Mr. Hillman, five hundred, in 1871; J. Bonsteel, one thousand, in 1873; Herbert Taylor, the most scientific orchardist in the county, eight hundred, in 1880. Mr. Court Morgan continued the nursery, and in 1881 began planting his large orchard, which now contains about twenty-five hundred trees and is a source of great profit. Mr. William Means was another pioneer planter of ten acres in 1868. Trees were from New York and Wisconsin, and contained, besides all the crab varieties, Golden Russett, Talman Sweet, Ben Davis, Fameuse, Red Astrachan, St. Lawrence, etc. But a few years after starting he planted more Duchess, and a hundred or so Wealthy, and from these varieties he is now making his money.

In 1885 we began nursery canvassing in Minnesota and Iowa. About 1891 we began growing nursery stock at Preston, and in 1894-5 began putting out large commercial orchards in Fillmore County. In our eagerness to get large orders, we sold to every person we could induce to buy. Every lever in the tree craft, wielded by keen salesmen, was brought to bear. Men who had never given a thought to commercial orcharding, whether they liked the work or not, were sold to, and we have had to fight some of them ever since to get them to take care of their trees. And even now with a profitable market, some of them would rather have the trees off their land than on. We have found that men that don't like trees, or have no taste for that work, had better leave commercial orcharding alone. A few here have failed altogether, a few more have made about a half success of it, and the balance, about sixty per cent, are making good big money, are enthusiastic and planting more.

Mr. O. W. Moore's report in the October, 1908, Horticulturist explains fully our method of co-operating with the farmer in large orchard plantings. That report, stating that 75,330 apple trees were planted in Fillmore County in the last twelve years, only embraces the orchards of 500 trees or more. A hundred smaller orchards were

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planted to one large one, so it would be conservative to place the number of apple trees planted in Fillmore County in the last thirteen years at 250,000. The largest orchard in the county contains 3,200 trees; another, 2,700; another, 2,500; a great many 1,000 trees. With the exception of five or six, all the large orchards, about ninety-five, have been planted in the last fourteen years.

In 1904, fifty-two cars of apples were shipped from Fillmore County. In 1905, about twenty cars were shipped, and in 1907, between seventy-five and one hundred. This year about twenty-five were shipped.

A row of Wealthy trees, thirty years old—almost a hedge row—on place of Cory Means, near Preston.

We generally plant apple trees about three inches deeper than they were in the nursery. Trees bear better when not set too deep. A tree set a foot or so deeper than it *was* is too deep and not natural and will not bear as young nor as well. Roots very seldom grow out above the original roots planted. Home nurserymen make the orchards, and home grown trees (like seed corn) are the best. However, I would

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rather have a well grown, well handled thrifty tree, even if grown fifty miles south, than a tree grown so far north or west that it was *stunted* from *severe climate* or *cold ground.*

The subsoil in our county is a yellow clay and is as soft as the top loam clear to the limestone, whether two feet or thirty, and on the highlands there is not a particle of sand in the soil. Apples grown on this kind of land are sounder, better flavored and far more nutritious than apples grown on black prairie soil with blue clay subsoil. Our county is about all grub land, underlaid with limestone, and with our rivers and creeks we have plenty of hollows and hills, and on these hills we find the very best orchards. An orchard is better on the highest *levels*, with the land sloping every direction, than anywhere else. Apples will stick to a tree better on high lands than on hillsides or lowlands. We want *no* windbreak for a thousand-tree orchard unless it is eighty rods or so away. A tree standing alone on a *hill* will carry nearly every apple to maturity. Nature does this. White oak ridges with their white ashy soil and limestone near the surface, produce the most apples, and they are sounder, better flavored and colored than any other ridges produce. Although trees grow larger and faster on burr oak and other ridges, white oak ridges for *quantity* and *quality.*

Wealthy, Duchess and Patten's Greening are the money-making varieties here. I know of one old ten-acre orchard where one hundred Wealthy and ninety Duchess produce more profit than the other eight hundred trees. Three years ago, one hundred Wealthy trees in this orchard produced $525.00 worth of apples, which sold on the trees for $1.25 per barrel.

Spraying is not practiced here yet, but during an apple year the apples are smooth and sound. In packing a hundred barrels of Wealthys this year, only one barrel was thrown out as bad. Hogs are allowed to run in the orchards. This seems to be the easiest way to raise apples, and whether the best way remains to be seen.

Only recently apple buyers began coming here, but now plenty come each year to take care of the apples.

Some of the older orchard men nearly always ship their own apples. The method of handling and shipping apples here is in bulk or in barrels. If in bulk, the buyer goes to the grower and gives him so much per hundred pounds for his apples delivered at the cars. He must hand pick them and load them into a wagon-box that has a foot of hay in the bottom and blankets over the hay. If driven slowly in the beginning until the apples settle themselves they are in fine condition when loaded into the refrigerator cars, 25,000 lbs. to the car, about

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five hundred bushels. This is the most profitable way to ship Duchess or apples that are to be used quickly at the end of the journey, as it saves the price of the barrels, 30 or 40 cents each. Fillmore County has shipped apples to Indiana, Missouri, Oklahoma and other southern states in this way.

The other way, by barreling, *if done right* is a very nice way to handle our sound fall apples. The buyer goes to the grower and gives him so much per barrel for his apples and *packs them in the orchard.* This is the way to get good hard stuff to the market. The buyer furnishes the barrels and packs them, the grower picks them and hauls the packed barrels to the cars and the empties to the orchard. Good packers run all the apples over a table or platform, where the pickers pour them. In this way the thing is done up *nicely* and quickly, the grower has his cash, and the apples are put onto the best market, as the buyer and commission men know where this market is better than the individual grower. A union of fruit growers would probably be better yet.

The Homer Cherry Record in Southeastern Minnesota.

WALTER A. YAHNKE, WINONA.

The Homer Cherry has a record of fifty-three years in southeastern Minnesota, a record worth considering. It has experienced the test winters and is the result of the survival of the fittest.

This variety had its origin in New Haven, Conn. It is a root sprout which came up from a sweet cherry that had died. It was found growing on the fruit farm of Samuel Alling. It was not much thought of because sweet cherries were there in abundance, and the value of the fruit was not known until some one tried canning and making pies of them. When fully ripe it was learned that it was not as sour as at first supposed.

This sprout bore so very prolificly and so young that Mr. Alling, after settling in Minnesota, sent back for eighteen small sprouts. Only three years after planting he had fruit from them, and year after year they bore with hardly a failure. By this time Mr. Alling began to think he could raise cherries in Minnesota also, and planted quite an orchard of this variety, using the sprouts produced by the eighteen trees. He gave away some to the neighbors, and these in turn furnished some for others. In this way the Homer cherry was disseminated through-

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out Winona County, where there are at the present time between 5,000 and 6,000 trees in bearing.

It was estimated that we must be particularly favorably located in order to grow cherries and to make a success of it. All who tried other varieties failed. One grower had fifteen varieties growing and has grubbed them all out except a few Early Richmonds. I have on trial many varieties, including some of the Russian sorts and of the sorts grown in states south of us. Every spring I find some are dead. They have never born a crop and are about fifteen years old. Is it anything to be wondered at that the cherry has been neglected? And we met with the same failures as the rest until the Homer demonstrated its superiority over all others.

Two rows of Homer cherry trees in blossom in Mr. Yahnke's orchard.

The village of Homer is located at the foot of a high range of bluffs, sloping in various directions. The general slope is toward the north. My place is located about two miles from Homer. My orchard is not in a very favorable location, being nearly a southwest exposure. The trees are as healthy as on more favorable locations.

This cherry is growing in many parts of the state as well as in the states joining us. There are two orchards at Hopkins, a few miles from Minneapolis, of fifty trees each. They are doing well and have

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not shown any weakness from the winters. One gentleman has five different varieties with which to compare it, and it is doing the best of them all. They are full of blossom buds this fall with a prospect for a crop next year.

This spring we were pretty sure that the crop was gone. Just at the time the buds were on the point of opening a cold rain set in, and it turned cold. Icicles were hanging from the buds and did not thaw off for twenty-four hours. For two nights after the ground froze hard enough to hold a team, yet the buds were not injured, and we had one of our best crops.

I give here an average income of 100 Homer cherry trees for the first ten years after planting, secured from several growers including myself. The first returns were four years after planting, averaging eight quarts per tree. Five years after planting, they yielded sixteen quarts per tree. The year 1904 was a failure. Seven years old, an average of thirty-two quarts. Eight years, about the same. The year 1907 was another failure. At ten years old the average was forty quarts per tree. The total receipts of my Homer cherry orchard have amounted to 12,500 quarts, or $1,500.

An orchard ten years old is bearing its best. The yield in the next ten years should average at least fifty quarts per tree. One grower reported that he picked from one tree four bushels, another reported 100 quarts, another reported two bushels from a tree eight years old and so on. I have never seen it fail that we did not secure three good crops out of five years.

The Homer becomes more prolific as it grows older. It grows less but spends its strength in blossom buds. On gravelly soil it becomes a dwarf tree and bears younger and is more prolific but is shorter lived.

The Homer cherry is mostly propagated from root sprouts. These trees are more valuable for the reason that an orchard of them is perpetual. The original plantings of this variety are good bearing orchards at the present time. It is now fifty-three years since they were first planted. They have renewed themselves, and no replanting was necessary. When a tree dies there will be a shoot coming up out of the trunk near the ground. When we see that a tree looks sick we allow a shoot to grow large enough before the old tree becomes worthless. In this way the old tree will not be missed.

The cherry is a fruit that requires certain conditions to bring it to its highest stage of development. It does its best on a dry and well drained tract of land. I have observed that the cherry can be grown successfully in almost any location or soil, provided the ingenuity of

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man comes to its assistance. I mean that a tree can be adjusted to its situation so that it may receive the proper amount of sunlight and shade, the soil can be enriched to suit the needs of the tree and the required amount of moisture supplied or drainage furnished where drainage is possible, and where drainage is not possible I would advise not to plant. There are different kinds of soils where cherries are growing, on heavy clay soil, while others have a light clay loam, and some is very gravelly. We have good natural drainage in every case. This is very important in growing cherries. I find them doing the best on a light clay loam.

Homer cherry tree, four years old, in blossom.

We come now to the point whether we should seed down the cherry orchard or keep up cultivation. This depends upon the soil and location. On a sandy or gravelly soil, cultivation should be kept up every year, while on heavier soils it should be cultivated at least five years. By this time the trees are quite large and able to take care of themselves and should be seeded down to clover and orchard grass. This will induce them to set more blossom buds. The cherry will grow

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and thrive better with less care than other tree fruits. I have a young orchard on a very steep hillside. It was necessary to stop cultivation three years after planting in order to hold the soil. They are very thrifty and are doing finely.

The cherry is subject to one dangerous disease, called shot-hole fungus. When this disease has developed, the leaves drop off. Some varieties are very much subject to it. It is contagious and will spread to other varieties. I knew of an orchard about two miles from where I live that went out, root and branch, from the effects of this disease.

This orchard consisted of a number of varieties. This disease works on the tree by causing them to shed their leaves in July, and a tree without leaves at that time of the year might be counted as a dead one, although I know of instances where trees leaved out again and grew. But the vitality of the tree is checked, and the crop for the next year gone. This disease sometimes strikes them before the cherries are ripe, and if not sprayed in time the crop will not mature. I have noticed that the trees I have of the different varieties are breeders of this disease. The Homer resists it wonderfully, and where it is grown exclusively we have no trouble. The fungus can, however, be kept under control. Before the buds open, spray with six pounds of copper sulphate to forty gallons of water. Less copper sulphate may be used, but where the disease is gaining I would not use less. After the blossoms have fallen, spray with Bordeaux mixture, using four pounds copper sulphate, four pounds of lime to forty gallons of water. To this mixture add ten oz. paris green for the curculio. Spray again when the fruit is half matured.

Cherry trees should not be planted too close together. Plant twenty feet apart each way. If close together, as some recommend, they grow up too high, the lower branches will die off, and it will be found very hard to gather your crop. Give them plenty of room, your trees will be healthier, more thrifty, more productive and longer lived. The branches will hang nearer the ground and you will find it very much easier to gather the fruit and will have less breaking of branches by the pickers.

Plant low topped trees and keep your knife in your pocket. Cherries require no pruning and are best to grow naturally. Only the dry branches should be removed.

In conclusion I must say that the Homer cherry is certainly a profitable variety with us in southeastern Minnesota. Considering reports received from it far and near, I am persuaded to say that it has

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a wider area than southeastern Minnesota and should be more extensively tried.

Col. C. W. Gurney, (S. D.) I would like to ask the gentleman in what respect the Homer is superior to the Early Richmond?

Mr. Yahnke: It is earlier and healthier, and the Homer is longer lived than the Early Richmond. The Early Richmond is sour, and the Homer is sweeter and will sell for a higher price on the market.

Col. Gurney: Do you grow the Richmond successfully?

Mr. Yahnke: We do, but as a general thing they are not as long lived.

Col. Gurney: The Richmond does not succeed in all parts of Minnesota; I understand it does not.

The President: Not generally, the fruit buds often kill in winter.

Col. Gurney: Then how do you know the Homer will do any better?

Mr. Yahnke: As far as we have tried it we have more crops from the Homer than from the Early Richmond. In five years we have had three crops from the Homer to two from the New Richmond.

Col. Gurney: Has it been generally disseminated throughout the state.

Mr. Yahnke: There are orchards all around in our vicinity. We have compared it with several other varieties, and we have decided it is the best we can grow.

Col. Gurney: You have decided it is superior to the Early Richmond?

Mr. Yahnke: Yes, surely.

Mr. Crosby: Is it not the Rocky Mountain cherry?

The President: That is practically a sand cherry. It bears freely, but the fruit is apt to be affected by rot.

Mr. J. F. Benjamin: Does the Early Richmond sprout from the root?

Mr. Yahnke: I understand it does.

The President: They sprout from the root, there is no question about it, if on their own roots.

Mr. Yahnke: We have tried the Richmond, and found the Homer is superior to it, fruit and tree.

The President: They have grown the Early Richmond and other varieties and have given preference to the Homer.

Mr. Benjamin: Is not the Early Richmond more hardy on its own roots?

Mr. Yahnke: Certainly it is more hardy on its own roots.

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Plum Raising in Minnesota.

JAS. ARROWOOD, NEVIS.

I have been growing plums for more than thirty years. It has been my method to select from the very best fruit I could find in the state.

I plant the pits in the field and cultivate until they commence to bear, which will take from three to five years.

Then I commence to gather pits from the best of these trees. Every tree that does not bear good fruit is removed from the orchard and so are not allowed to mix with the other trees. After repeating this for several times and removing all poor fruit trees from the orchard, I have several varieties of fine fruit.

Then I commence to graft. I take the roots from two selected trees, and the graft that is to be used on those roots from one of my best early plum trees. I graft them together. This will give me a fine tree and good fruit.

Remember these trees are from the very best and hardiest wild plums that can be found.

I always manure and cultivate every year. Now I am raising plums that measure five and one-half inches in circumference. They are of the best quality and good keepers. The trees yield a nice crop most every year.

I set all trees in the ground sixteen inches deep and trees ten feet apart in the row. I plant the rows twenty feet apart. I cultivate four to five times a year. In the winter I mulch well with coarse manure, and let this mulch remain around the trees until I commence to cultivate. After the trees leaf out in the spring I do all my pruning. I spray in the fall and just before the trees blossom and again when the fruit is about the size of a small pea.

During the summer I dust out the chimneys and late in the evening I sprinkle the dust over the trees. This keeps off the little insects that would hinder the leaves and fruit from doing well.

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What Spraying Has Done for Me.

H. H. POND, BLOOMINGTON.

Eight years ago my first apple trees were coming into bearing, and as I heard a great deal about the merits and necessity of spraying, while attending these meetings and otherwise, and as I wanted to do everything I could for my trees to make them a success, I decided I ought to spray them.

I found a cheap hand spraying pump at a hardware store in Minneapolis and bought it, and very soon after getting it home my experience began. It was too early to spray the apple trees, as I then thought, and as the pump was recommended for applying whitewash to buildings, I thought I would try it, whitewashing my chicken house. So I mixed some whitewash and went to work.

The pump threw a spray all right, but I found I needed three hands to operate it. One to hold the pump down in the pail, one to work the handle, and one to hold the hose and direct the stream. As I had only two hands I had some trouble. The pump became clogged some way, and as I was using both hands in a somewhat unguarded way trying to start it, it suddenly threw a stream of lime and water right into my eyes.

I did not finish my chicken house at that time. I was laid up for a few days, and thought I would lose my eyes, but they came out of it and are doing service yet.

I soon after exchanged my pump for another which can be held down with the foot, leaving both hands free to manage the pump. This seemed much better, but the spraying nozzle has always bothered me a good deal by clogging.

My next experience in spraying was with a little Forest Garden plum tree which had leafed out, and I thought I would spray it on general principles. I used Bordeaux mixture made after the usual formula, with a little Paris green. It killed the leaves, and the tree never leafed out again. I felt pretty bad about it at the time, but am glad now, as I consider this variety of no value.

When the petals fell from the apple blossoms I went over the orchard, carrying the spraying liquid in a pail from tree to tree, setting the pail on the ground at each tree. I was surprised at the short time required to go over a small orchard in this way, but as I have increased my orchard I have found it too slow and laborious to carry the spraying material in this way, so have adopted the plan of placing the barrel of liquid in a wagon and have it driven through between

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the rows, standing in the wagon and doing the spraying from the wagon instead of from the ground.

This we found to be a great improvement. It is a rather disagreeable job at the best, as the spray will quite often blow back over the operator.

The "home place" of H. H. Pond, on the bluffs near the Minnesota River.

I have never sprayed but once in a season, and have found the material showing on the leaves in the fall when picking apples which had been applied the preceding spring, and so concluded it must have great staying powers.

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For eight years previous to 1908 we have sprayed once each season, and our fruit has been generally smooth and free from blemishes. That is, the apples. Plums I have given up. The insects and fungi seem to take them, spray or no spray.

The spring of 1908 there were few apple blossoms, and the weather was rainy and other work was pressing, and the spraying was not done. The few apples that were produced were more than usually wormy and gnarly.

A neighbor suggested that it might be because there were few apples and the insects were concentrated on them, while if there had been a larger crop they would have spread out more and not have been so noticeable. I am unable to say whether lack of spraying caused the bad condition of the fruit, or the neighbor's explanation was correct.

I think my experience would tend to show that spraying has done something for me in the way of securing good, smooth fruit, but just how much it is impossible for me to tell, or what the fruit would have been in the good years if the trees had not been sprayed, or what the result would have been if the orchard had been sprayed last spring at the proper time.

Small Fruit Culture in the Pine Regions of Minnesota.

A. B. COLEMAN, BENNETTVILLE, AITKIN COUNTY.

Red Raspberries: Raspberries have been profitably grown in this region for over twenty years. The Cuthbert is the variety mostly grown. The Marlboro and King are failures; the Loudon is the most prolific, but the fruit is so large and soft it is unfit even for the local market.

Raspberries are usually planted in rows eight or nine feet apart and from two to three feet apart in the rows. The soil is usually either a sandy loam over a clay subsoil, or a clay soil and subsoil, although several of the best plats are on a sandy loam over soil twenty feet deep.

The Cuthbert does not bear a profitable crop until the third season, and from then until they are from twelve to fifteen years old they are loaded every year. One plat that was planted on a clay loam, over clay subsoil, sloping to the northeast, was fruited for seventeen years. Even in the dry season of 1900 there was from one-half to two-thirds of a crop.

By using the hedgerow system you can cull out all weak ones, leaving only the strong, thrifty ones to fruit. One mistake some of the growers have made is in fertilizing too heavily with barnyard dress-

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ing. The Cuthbert will *not stand it,* and for several years will only produce a large number of small, weak canes that fail to mature.

Blackcaps: Owing to the low price of blackcaps several years ago, there are not many now grown, although at present they are as profitable as the reds.

Strawberries: When the soil is properly prepared, they bear large crops. They are generally grown on sandy loam soil, but large crops of nice fruit have been grown on the clay, though it does not hold moisture like the loam. The Dunlap has been the leading variety for several years, but at present some of the growers are looking for a new variety, or are going back to the Bederwood, which has always borne heavy crops of fruit, that I think are finer than what we used to grow in the vicinity of Minnetonka. The rows are six feet apart and plants about two feet in the rows, which makes a row from two to three feet wide. Some growers have tried the hill system, but it has been a failure in every instance. It is not profitable to retain them more than two years, as the white and red clover are as bad pests with us as is the blue grass in some localities.

A. B. Coleman's home, at Bennettville, Minn.

Blackberries: These are grown in some localities and bear immense crops of fine, large berries. One disadvantage is that the canes are so large and brittle that it is almost impossible to lay them over for winter protection. The Snyder is the principal variety. The Stone's Hardy promises well until almost ripe and then dries up, while the Ancient Briton does not set much fruit and is very slow in ripening.

Mr. Coleman: This article was suggested by the idea that many people have that we cannot grow anything but a crop of chilblains in our part of the state. We are raising fruit in an experimental way now, although there has been a good deal raised in the last twenty

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years. Bennettville is about one hundred and twenty-five miles north of here.

Mr. S. P. Crosby: I live in the pine regions, or more correctly speaking, where the pine used to be, as it is largely cut off, and I live in the corner of the county, where I can throw a stone into Kanabec and also into Chisago and Pine counties, and I doubt whether that section can be beaten by any section in Minnesota. The gentleman who preceded me said where he lives they have sandy soil, but where I live the soil is light, about five or six inches of a brownish soil, and below that is clay or hard sand. We have high land and low land, and we find a great deal of peat formation, soft peat. On sandy soil, where Mr. Coleman is, it is better to cultivate it to some extent and put manure upon it, but this heavy, peaty soil thrown over on this sandy soil works finely, and I raised some of the finest crops of potatoes and corn I ever saw where that treatment was followed, and where the black soil was mixed with about 10 per cent of slaked lime.

So I say that formation is especially well adapted to raising small fruit of all varieties. I have been raising strawberries on that high soil, and I did not put on any mulch in the winter, and they lived through all right. I feel quite proud of that fact because I have heard many people complain that they had a great deal of trouble in keeping their strawberries over winter. Two years ago I had Senator Dunlap and Lovett. Two-thirds of the strawberries were covered, and one-third were left exposed, and those left exposed were just as good as those covered. I also raised some currants on that high land which were as big as Delaware grapes, and that is about as big as any one can expect to raise currants. I can grow the Cuthbert raspberry, and the strawberry-raspberry grows finely. My blackberries were not a success, and that is something I hope will be discussed, because I want to get some pointers on that subject. One thing about raising blackberries: I may be lazy, and I admit I do not like to cover them, and I will not cover them, and if I can grow raspberries right alongside of those blackberries, and the blackberries die every winter if I do not cover them, then I will not grow them at all, because I do not want to go to that trouble.

Mr. Brackett: The gentleman who spoke is all right in his estimate of small fruit growing in northern Minnesota. I have just returned from the Iron Range, and I found them growing strawberries and raspberries on any kind of soil, both on high clay soil and on sandy soil, and the principal strawberry I find they are growing is the Senator Dunlap, and it is doing better than any other strawberry they have ever tested. In that part of the state they have a great deal of snow in winter, which protects their strawberries. With us we have root injury, which is our great enemy. There is scarcely a winter when our strawberries are not hurt in the root by the severe winters. Speaking of blackberries, it is absolutely useless to attempt to grow them unless they are laid down and thoroughly covered in winter. No one will ever make a success of growing blackberries in this part of the country unless they are thoroughly covered.

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SECRETARY'S CORNER

PLEASANT WORDS FROM AN OLD MEMBER.—"We have the best horticultural society, none of the members are scrubs. I am proud to wear the ribbon; it stands for all that is good"—Seth H. Kenney.

ANNUAL MEEITNG, MINNESOTA STATE AGRICULTURAL SOCIETY.—This organization, whose special work is to operate the Minnesota State Fair, will hold its annual meeting in the Minneapolis Court-House January 12, 13 and 14. The Horticultural Society has appointed three delegates as its representatives at that time, as follows: Mr. F. H. Nutter and Mr. S. A. Stockwell, of Minneapolis, and Mr. F. H. Gibbs, of St. Anthony Park.

DELEGATE TO IOWA STATE SOCIETY.—The regular appointed delegate, M L. R. Moyer, for the annual meeting of this society, held in Des Moines Dec. 8-10, was unable to go on account of sickness in the family, and Mr. LeRoy Cady, Prof. Green's assistant at the Experiment Station, was appointed in his place. He attended the meeting during the entire session, and a report of it will soon appear. For some reason not yet explained there was no delegate from the Iowa society present at our late meeting.

ANNUAL MEETING OF THE WINNIPEG SOCIETY.—This society, called the Western Horticultural Society, will hold its annual meeting in Winnipeg, Feby· 17th and 18th, in conjunction with a convention of the various Manitoba agricultural societies. The Minnesota society should certainiy be represented at that gathering, and if any of our members are to be in that vicinity at about that time that would be a most convenient arrangement for us, and could be made most agreeable also for the attending member. Will any such please communicate with the secretary?

SOUTH DAKOTA HORTICULTURAL SOCIETY.—This society is to hold its annual meeting this year in Deadwood, January 19, 20, 21. Mr. S. H. Drum, of Waseca, had accepted the appointment as our representative there, but when we came to look up the matter of transportation it was found to be by such a roundabout route, making the distance to be travelled about 800 miles each way, that it was concluded not best to undertake to send a delegate to that meeting this year. It is understood that Prof. Hansen will be home from his Asiatic trip at that time and take part in the meeting, and as this is the first meeting of that society held in the Black Hills region a very successful occasion may be expected.

WE NEED MORE REPORTS.—The membership of the society has reached such dimensions that last year we were unable to furnish three or four hundred members with copies of the bound volume of the report of this society. This ought not to be, and the only remedy in sight appears to be to ask the State Legislature for a further small increase of the issue of the report. This should not be to difficult to get, and with a little assistance on the part of our membership the 1,000 additional volumes we are expecting to ask the legislature for should be had without any special effort. Members are requested to communicate with their senators and representatives briefly as to this need, and we count confidently on such assistance from this direction as will give us the desired results. The membership roll is somewhat ahead of last year at this time, and with the normal growth of the society we may expect a still greater shortage in the proportion of reports we can furnish the current year.

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MEETING OF THE SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—This auxiliary society will hold its annual meeting this year at Owatonna, on Jan. 22-23. As this is in the center of a successful fruit region, and where no horticultural society has met now for many years, there ought to be a large attendance. Members of the state society living within reach of that place who can possibly do so should by all means attend this meeting, which is certain to be an enthusiastic one. Mr. Cashman and Mr. Mitchell, leading members of the state society and residents of Owatonna, have undertaken to make it go, which alone is assurance of success.

NEWS FROM MARTIN PENNING.—Martin Penning, the originator of the Surprise plum, although he is in a new location at New Ulm, having moved two or three years since, is already digging up some new things, and has now a seedling plum in fruiting which he describes as the size of the Surprise, dark red, extra in quality, etc., which he expects to show at the next state fair. He speaks also of a new blackberry which is hardy, standing winter without protection, and bearing a fine crop, while the Snyder killed alongside This blackberry is from Wisconsin, and he judges an old variety though it has been growing in his vicinity twenty-five or thirty years. We ought to know more of it.

MEETING OF AMERICAN POMOLOGICAL SOCIETY.- The next biennial gathering of this society is to be held in St. Catherines, Ont., September next. It has been a long time, we understand, since this convention was held outside the United States, but the place selected seems to be a proper one for the purpose, as it is in the midst of a fine fruit growing district.

The management there are already asking for the appointment of delegates to the meeting and offering inducements to visitors in the way of numerous excursions through the orchards and vineyards of the famous Niagara district, the locality mentioned being within easy reach of the Falls of Niagara. Who among our members will take this opportunity of visiting that region?

CALL AT THE OFFICE FOR REPORTS. -Members living within convenient reach of the office, that is, in Minneapolis or suburban towns, are requested to call at the office for the 1908 report, but please note that on account of there being not enough reports to supply all of the membership that these reports are given out only to those members who have complied with the regulations that require that the magazines of the previous year, that is, the "Minnesota Horticulturist," have been distributed where, in the judgment of the distributor, they will be of use to the society or the persons receiving them. Heretofore this regulation has not been strictly enforced, but under the present condition it becomes necessary.

LIST OF AUXILIARY SOCIETIES. In the list of these societies as published in the secretary's annual report, to be found in this number, there will be noted some omissions: for instance, the Woman's Auxiliary and the Plant Breeders' Auxiliary. While these organizations are auxiliary to the work of the society they are not auxiliary as contributing to the membership of the society, and hence are omitted from this list. Their importance, however, is very large in furthering the purposes of the organization. The assistance of the women is highly appreciated especially on the program, and through the Plant Breeders' Auxiliary great assistance is anticipated in securing through origination the new varieties of fruits absolutely demanded by the fruit growing interests of the Northwest.

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ARE YOU COMPETING FOR THE APPLE SEEDLING PRIZES?—There were over two hundred competitors listed for these valuable prizes of $100 a year, for seven years, amounting in all to $700. Some of these have already dropped out through lack of success in growing or protecting their seedling trees. It is not by any means too late, nor will it be for two or three years yet, to enter into this contest, and there are hundreds in the society who are not yet growing seedling apple trees for this purpose that might do so. Seeds saved from good specimens of the Wealthy, Patten's Greening, Northwestern Greening, or other good keeping varieties are almost certain to bring something of value to the grower. One of the keenest of pleasures is to watch the development of some new growth like a seedling apple tree and anticipate the character of probable results. If you don't win the $100, you will at least have the joy and satisfaction that comes with the effort.

SEND FOR APPLE SEED.—A small quantity of apple seed has been secured by the secretary and can be had by application to him at the rate of ten cents per packet of twenty-five seeds. In each case with the seeds sent will be a record of the variety from which the seed came and the place where it was grown, so that this seed is adapted for use in competing for the seven $100 prizes offered by the society. We earnestly desire the co-operation of every member of this society who is situated so that he can plant this seed and care for the trees until they reach bearing size. Those who understand grafting can by taking scions from these young seedlings and grafting into old trees bring them into fruitage much more quickly, so that from the time the seed is planted until the first fruit is gathered under favorable circumstances need not exceed four or five years. Each packet of seed sent out will be accompanied by a circular giving very plain directions for caring and planting this seed and growing trees, also full particulars in regard to the prize contest and an application blank which can be filled out and returned to the secretary after the little trees are growing from this seed.

HORTICULTURAL INSTITUTE WORKERS.—The Farmers' Institutes, under the management of Supt. A. D. Wilson, are planning great things for the winter service. Already during the month of December there have been four corps in the field, and the full number will undoubtedly be maintained throughout the winter season. Mr. A. Brackett, of Excelsior, and Mr. R. A. Schutz, of LeRoy, both of whom have had several years' experience with the Minnesota Institutes talking horticulture, are again in the field for similar work this winter. Mr. N. E. Chapman, of Owatonna, is doing similar work for the first time this season and has made a good preliminary record. Mr. F. B. McLeran, who was with the the institute corps as horticulturist in part last season is also doing similar service this year. All of these workers supported by the othér members of the corps are doing loyal service for the Horticultural Society, and are a large factor in the success of this organization.

Members of the society are urged to attend the institutes held in their vicinities and do what they can to add to the interest of this part of the program, for which we have special care.

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RESIDENCE AND HOME GROUNDS OF MRS. JENNIE STAGER, SUPT. OF TRIAL STATION AT SAUK RAPIDS FOR MANY YEARS.

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THE MINNESOTA HORTICULTURIST

Vol. 37 FEBRUARY, 1909. No. 2

TRIAL STATIONS, 1908.

Central Trial Station, St. Anthony Park.

PROF. SAM'L. B. GREEN, SUPT.

The work of the Division of Horticulture and Forestry at the Experiment Station has considerably increased and improved in efficiency during the past two years. During that time a fruit farm has been established at Zumbra Heights, on a satisfactory basis, with an energetic and enthusiastic man in charge, and Itasca State Park, which was placed in charge of the Forestry Board by the last legislature, has been made available for experiments in forestry under the direction of this division. I think we have every reason to expect increased helpfulness in the lines of fruit breeding and forestry as a result of this extension of opportunities.

Fruit Farm. By the establishment of the fruit breeding farm at Zumbra Heights all the work which would naturally come under this head is taken away from University Farm, and opportunity is now obtained for the increase of this work on a scale sufficiently large to meet the requirements of the situation. While the removal of this work from University Farm takes away an interesting feature from this place, especially so far as it gave visitors opportunity to easily look over the whole work of horticultural experiments, yet it has the great advantage of concentrating the fruit-breeding work in one place and under one head. It is my earnest hope that we shall be able to keep the work of this fruit-breeding farm specialized on fruit-breeding and not branch out on widely different lines. I think this important in order to secure most helpful results.

Mr. Chas. Haralson, the superintendent of the fruit-breeding farm, has reported in detail in regard to the work carried on there during the past year. It might be well to add, however, that this farm consists of eighty acres of high land which is well adapted for fruit raising, with the exception of a few potholes, which we have drained and made good, productive soil. About fifty acres are now tillable,

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and twenty more we plan to clear up and break at an early date. We have planted this year a considerable amount of seed of different kinds of desirable fruits, as well as set out a large number of named varieties. Altogether we have grown this year perhaps 100,000 plants for experimental purposes.

We shall pay considerable attention to the breeding of fruits under glass, since in this way we can obtain just the right conditions for best crossing work. For this purpose we have bought in Europe and in this country several hundred dwarf trees and bushes, which, together with some dwarf plants that we had raised especially for this purpose, gives us a good collection of hardy varieties of tree fruits for crossing purposes. We shall also undertake in a similar way crossing

Vegetable testing grounds at State Experiment Station.

work with gooseberries and strawberries, for which purpose we have a good collection of plants on hand. The care and management of these in connection with the greenhouse will afford opportunity for carrying on experimental work in fruit-breeding throughout the winter as well as in summer, and we believe will hasten the coming of valuable results.

It is important to get those varieties and forms of plants that are most liable to vary. These may occasionally be found among native plants but are more likely to occur among those that are cultivated. Plants which show variations from the normal type, even though these

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variations may sometimes be in the wrong direction, may prove a very good starting point from which to develop important kinds. We hope the establishment of this fruit farm may result in increased interest in this subject by the horticultural people of this state.

Forestry: There is a great and increasing interest taken in forestry matters, and very properly so, for it is one of the most important subjects now attracting the attention of the American people. The forestry school that was conducted the past summer in Itasca Park was a decided success, and has undoubtedly come to stay and to prove of much help to forestry matters in the way of giving a short practical course in this subject. This is intended especially for those who haven't the opportunity to take the full course in forestry in the university.

Orchard tree protected from sunscald by cornstalks. at central trial station.

Itasca State Park should be made a demonstration forest to show to the people of the state what forestry really is. It is quite practicable to carry out the original purpose for which this park was established and at the same time make it a demonstration forest. This is customary in many places in Europe and works to good advantage. There are now eighty students in attendance at the University Forestry School. I believe that the education of these young men in these lines means more for the placing of forestry wealth on a permanent footing than any other expenditure of the same amount of money can do for forestry in other ways.

Potatoes. The special work in the line of vegetable raising at University Farm this year has been with potatoes, of which we have raised about 8,000 seedlings and grown about 100 named varieties and interesting species for trial. Experiments have also been made with insecticides and fungicides, which matters will be reported on in a

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special bulletin to be issued shortly. Mr. A. R. Kohler, of this division, has been in especial charge of this work.

Prize fruit at the Children's Industrial Contest at State Experiment Station.
(See page 11, Jan. No.)

The Campus. The campus at University Farm has been considerably increased this year by the addition of several acres adjoining the new main building. Gradually the grounds about the University Farm buildings are assuming the features of a very considerable city park, and are so regarded by thousands of people who travel through them each year and find in them much of interest. We aim to keep a collection of the desirable introduced and native trees and shrubs on the campus, and to provide them with labels giving their common and scientific names.

Mr. LeRoy Cady, assistant professor of horticulture, has paid special attention during the past year to the cultivation of florists' flowers, a subject that should receive considerable attention, and which has added much to the interest of our grounds during the growing season. Now that the fruit growing work has been removed to Zumbra Heights, better opportunity is afforded at University Farm for these other lines of work.

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Collegeville Trial Station—at St. John's University.

REV. JOHN B. KATZNER, SUPT.

By an act of the executive board on June 22nd, 1908, a trial station was located at St. John's University, Collegeville, Minn., with myself as superintendent. I take this occasion to thank the gentlemen of the board for the honor conferred upon our institution and myself.

The climatic conditions of last winter were quite favorable to fruit trees. Everything half-hardy came through it entirely uninjured and made a vigorous growth during the season. If our winters would not get any colder, we could easily raise pears and peaches, but as it is they are too variable, and some years even the most hardy varieties will be killed or injured.

This spring during the blossoming period we had many cold rains, which were somewhat injurious to the setting of much fruit. Then came the severe, protracted drought, which interfered much with the proper development of fruit and the growth of trees. In consequence thereof the plums lost a part of their leaves in the beginning of August, and the fruit did not properly ripen; in fact, it was unpalatable. The Surprise was the only plum of some value. The bearing apple trees, too, lost part of their leaves rather early and made scarcely any growth. The fruit remained small till late in August, when a heavy rain helped the fruit to grow nearly to normal size in a week's time. Only half a crop of apples was gathered. At present there is scarcely enough moisture in the soil, and this may cause some winter-killing.

What a fertilizer will do for an orchard in a droughty season, I had occasion to learn the past summer. Two of my Patten's Greenings stand on rather poor land. The leaves of the one were yellow and dropped early, the growth was less than three inches and many of the apples were only two inches in diameter. The other tree had a chance to get nourishment from a compost pile four feet away. Its leaves were dark-green all through the season till frost killed them; it made a growth of more than two feet, and the apples were three and a half inches in diameter. This may be a pointer for others as well as for me.

The grapes did very well this year; the Beta and Gaertner were about the best. A new variety of grapes, received from the State Reformatory at St. Cloud, bore a few nice bunches for the first time. It is similar to the Beta, of better quality, and about as hardy. Strawberries and currants were not as good as they were the preced-

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ing year. The currant worm, too, got in its work, defoliating the bushes. The flower beds, along with the shrubberies, were of usual excellence, and the vegetable garden gave abundant returns.

Last spring we set out some fifty apple trees of different varieties, one dozen plums, forty Ohio buckeyes, ten filberts, two sweet chestnuts and a hundred Norway spruce, to replace some that failed to grow.

St. John's University and surrounding country, at Collegeville, Minn.

Not much was done in evergreens this year. The evergreen plantation of about ten acres, containing some fifteen varieties, is a pleasure to behold and an incentive to further efforts. The evergreens made a very good growth during the season. Two black walnuts, which were transplanted in 1907 and were then seven feet high, got over that shock safely and grew well last summer. Preparatory to transplanting them, the taproot and the roots on one side were cut off in July, 1906. In the fall the trees were dug, heeled in and planted the following spring.

In the orchards we have some 500 apple trees of about one hundred varieties, the greater number of which are already in bearing. Many varieties are unsatisfactory and will be removed. We have about 200 plum trees of many varieties, but they have been sorely neglected and many of the names lost. What they need is pruning, cultivating and fertilizing. Of cherries we have about seventy-five trees. I regret to say, that cherries are not quite hardy. This season the trees bore a little fruit, but the birds got it all before it was half ripe. Of the twelve apple trees grafted on Pyrus baccata, received

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from the Central Trial Station in 1906, ten are alive and promising. Some of them may bear a little next year. A second lot of twelve apple trees received in 1907 are very good and thrifty; two of these, however, have died, and one blighted to the ground the last summer. Two of the six seedlings from Mr. Wyman Elliot were set in the orchard and are doing well.

Front lawn at St. John's University, Collegeville, Minn.

I want to report here on a few varieties of apples that show up well with me. The Ostrekoff, a disappointment with many, is here very healthy and thrifty, a perfect tree of the Hibernal type. It bore for the first time some very handsome large apples. The same I might say of the White Russett. The Peerless, too, is a good tree and quite a heavy bearer with me. Besides these I want to say a word in favor of Patten's Greenings, and Patten's Seedlings Nos. 112, 105, 108 and 109. These five varieties, with the possible exception of No. 109, I consider as hardy as the Duchess. They are certainly very safe to plant anywhere in central Minnesota and farther north. They have been in bearing for some years, and the fruit is quite good. Then I have Patten's Eastman and Fameuse in the nursery, which are just as promising. The more I see of C. G. Patten's seedlings, the more I like them for their good fruit and heavy bearing, for their superior hardiness, health and thrift of tree. I never reported on these trees before, but a sense of justice and gratitude to Mr. C. G. Patten, as

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well as of duty to this society, prompts me to do so now. Luther Burbank may be the "Wizard of California," but, so far as I know, he has not originated a single variety of fruit for Minnesota. Here we have a man, our C. G. Patten, who, by deep study and hard work in unraveling the mysteries of pomology, has produced many hardy varieties of apples for Minnesota and the Northern States. He stands here today in horticulture like a beaconlight on the rocks of the ocean. His name will ever be among the foremost in horticulture and will be held in high esteem and gratitude by generations to come.

My little nursery is sixty by seventy feet, surrounded by a rabbit proof wire fence. The south half is used for testing fruit trees, the north half for raising evergreens. This part I had shaded entirely by a screen six feet high with boards on the sides and brush on top. It became defective and more than useless. To build a new one of this kind, I considered rather expensive; so I removed the old rotten structure and built one of laths in sections, four by eight feet, which rest on small posts only one foot above the seed-beds. These screens answer the purpose very well; they exclude about half of the sunlight and can be easily raised for weeding and watering the plants. The screens will be left two years over the seedlings and the third season removed to harden the plants. I sowed some Canadian white pine, which is said to be superior to our Minnesota variety, and, though many damped off, I have still a good stand left. Besides these seedlings we have several thousand bull pine, white pine, European larch and white spruce, most of which will be set out next spring. As a word of caution I may say: If you have a nursery, keep away all trees for some distance, especially poplars and willows. I had some Lombardy poplars and a white willow tree close to the nursery fence, and these trees run their roots all through the nursery, sending up shoots here and there. The seedbeds were so much overrun with roots, that they almost choked the evergreens and kept them from making much growth. I learned a good lesson. The poplars and willows were cut down, and the seedbeds will have to be worked over and cleared of the mass of roots as soon as the seedlings now on the beds are removed, before I shall sow evergreens on them again.

The south half of my nursery I use for testing fruit trees. I have on trial seventy-five varieties of apples, ten of blue plums and ten of the American varieties. I always try to get a few scions of promising sorts, which I graft and grow in the nursery for three years. If they do well for that time, I set them out in the orchard for further trial;

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if not, I throw them over the fence. When I get varieties without names from farmers, as often happens, I give them the farmer's name till I can identify them. I also have in the nursery two sweet cherry trees, the scions of which were imported three years ago. They came through last winter all right. I shall graft a few for further trial before I throw them away. Last year I imported from Germany thirteen varieties of pears. They got through last winter in good condition, but since this spring six varieties are about dead, likely from root-killing. It seems, too, they cannot stand the dry and hot climate in summer, and very probably a cold, severe winter will finish them.

Last fall I took out my 1,800 pear seedlings and heeled them in over winter, mainly to prevent root-killing, to give them more room and by partly cutting off the taproot to force them to grow lateral roots. Last spring I set them out and nearly all grew well during the season. I mulched them this fall, and now they have a chance to fight for their lives with a genuine Minnesota winter. Many of them, no doubt, will die, yet some I expect will get through safely. It seems, too, that pear seedlings are tender when young but are able to endure more cold as they get older. It is our intention to raise all the pear seedlings that stand the climate. This is the most interesting experiment I have had yet on my hands. The 1,800 seedlings consist, I might say, of 100 varieties, as the seed did, and the growth of the young trees does, indicate. In size they vary from one inch to two feet. Some are weak, others thrifty; some are spiney, others smooth; some have very small leaves, others large ones, all of different shapes and forms. Again some bear the marks of an austere nature and others of one more refined. In fact, I derived so much pleasure from watching the development of these pear seedlings that it cannot be compared with the little expense and labor I had; and even if I do not succeed in raising a single pear tree, I consider myself well paid for the trouble.

If you are located near a city where you can market product from the wagon, you will find that if you prepare vegetables with the same care that you do fruits, and be honest all the way down to the bottom of the basket, you will have a trade that no one can take from you, and your produce will bring a premium over the average market. The same rule holds true if you are shipping to other markets. A packet rightly packed is half sold, and is an invitation to buy another. It is always advisable, before planting your crop, to know to some extent where and how you will dispose of it. Make all preparation before the time of harvest. What might be serious losses are often avoided by looking ahead.

To some, a good outlet for this vegetable is found in the canning factories. While prices paid by these factories are not nearly so inviting, as that received from other sources, yet there is some advantage in growing crops for them. If the factories are near at hand not much care will be needed in packing or handling the crop. The main point being to produce the greatest bulk at the least expense. Very little is needed in the way of packages, and many items of expense are saved. To be profitable, the acreage should be as large as possible, so that when the gathering comes it will require steady hauling to the factories. In this way the extra help can be fully employed. There will be no loss of time or crops in having to stop and hunt for help when needed, or take chances on getting them just when wanted.

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Excelsior Trial Station.

A. B. LYMAN, SUPT.

The plum and cherry crop was very light the past season. We now think it would have been better if the trees had been sprayed. We had been told that spraying plums with the ordinary spray would do no good, so we have neglected the plum and cherry. We sprayed a few of the Miner plum, also six trees of the Bender, or Paul Wolf, and we were paid with a fine crop that was worth over $2.25 per bushel. We have an early plum that, like the Aitkin, has always been a failure because of being stung with the curculio. We sprayed it three times with bordeaux mixture and white arsenic, and this tree, for the first time in years, produced a good crop of early plums. I shall spray all the plums another season.

A group of Wealthy seedlings loaded with fruit, at A. B. Lyman's trial station, Excelsior, Minn.

The very best plum for this locality is the Miner. We have trees some thirty years old, and they produce fruit of good quality, while many of the other standards are a failure. It might be well to add that the Miner will not be a success much north of here, as it is not sufficiently hardy.

For a number of years the Miner did not fruit, and we found that they needed other varieties near to help in fertilizing the bloom. A graft of the Forest Garden in the top of the Miner is a great help in fertilizing it.

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The apple crop was less than fifty per cent of last season. Years of a short crop require more attention in spraying than seasons of a good crop. When trees are loaded with fruit it doesn't matter much. Carl Steller with his spraying outfit has added hundreds of dollars to the value of the local fruit interests, and at the same time he has made it pay him. With his spraying outfit we can get over our thirty acres in less than a day.

Some time ago we mentioned the Yellow Sweet and Peerless as not fruiting well. I will say that they have done well here for the past two seasons. The Yellow Sweet is an early apple of good quality, and there will be a local market for it wherever grown. We have three trees that we now find to be the Red Wine that have been planted for over fifteen years, and they have done remarkably well. The fruit is early and a beautiful wine color; size large and quality good—an early apple that doesn't perish like most early varieties. It has borne well every other season. We think this variety ought to be propagated more.

The Evelyn in the wind.

We think that the planting of the crab has been neglected of late, partly because these wet seasons crabs have not done as well as usual. We sold crabs at wholesale at $7.50 per barrel, and Mr. Steller sold his Lyman's Prolific at $9.00 per barrel. This was at wholesale. What must the consumer have paid? Wouldn't it be well for the society to offer a premium for a crab of certain high requirements? We believe it was well to do away with the premium on the collection of crabs and hybrids, as it brought out a lot of trash.

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We have sent you a photo of the Evelyn tree taken Oct. 1st. These apples are remarkable for staying on the trees. They hold like the Northwestern Greening and the Malinda. We have this variety fruiting on the original tree, on young trees and on top-worked trees. There doesn't seem to be any change in the fruit by propagation.

There will, without doubt, be originated more new varieties of apples within the next few years because of the effort the society has made to stimulate seed planting. Originators ought to be cautioned not to send out a variety if it is not a little better than what we now have. Do not expect any great change to come by propagation. Many varieties have come to this trial station for trial that never ought to have been sent out. Such varieties as the Kaump, for instance. Let the new varieties have size, quality and color, too, before you send them to the trial station.

Those that started to cultivate thoroughly are now seeding down—too much washing of the land and more or less blight.

The twelve trees on the Baccata roots have all done well; have not noticed any difference in those set deep from those set shallow.

Glencoe Trial Station.

A. H. REED, SUPT.

This has been another wet season added to the three previous ones in succession. In April, May and June excessive rains prevailed. The season was much less prolific in fruits and vegetables than that of 1907. The Compass cherry produced about one-half of its usual bearing, the native plum a two-thirds crop, where the trees were in clusters; but where single, no fruit at all. The Hibernal apple led in quantity; next the Patten's Greening; then the Strawberry crab.

The Cherry Tree. I find the cherry tree one of the hardiest and most prolific growers that I have planted, they being of the Early Richmond and English Morello varieties. They blossom freely and produce cherries, but the birds do the gathering as fast as they ripen.

Pear Trees. I have undertaken to produce pears and believe it can be done, as I have several trees that have passed through three winters and showed no signs of killing back last winter. I believe that when the pear tree gets well and deeply rooted and the wood by slower growth gets hardened up that we may look for successful production of pears in Minnesota.

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After a three years' trial of growing peach and quince trees, I have given up all hope.

The Apple Tree the King of All Fruit Trees. I shall confine this report mostly to the apple tree and orchard, as I am mostly interested in the apple among all the different kinds of fruit, believing that every citizen of Minnesota who owns a lot of land should have a few apple trees growing and that every one that owns an acre of land can, by planting that acre to apple trees, supply his family with all the apples they need in a very few years, or sell more from the production of that acre than from any other five acres they may have in crop.

I have experimented fifty-two years in Minnesota in trying to grow apple trees, but not until after forty-four years of failure did I meet with any degree of success—nor until I had learned to buy Minnesota grown trees. My first venture was in 1857, when I sent to Rochester, New York, and bought a thousand root-grafts of Yale & Co., planting them on my pre-emption claim near Glencoe. But an exigency occurred in 1861, and as my presence was needed in the cotton fields of the South, I left the pride of my undertaking to the ravages of the Sioux Indians and the white man, who fled from them.

My next venture for an apple orchard was in 1871, when I bought a lot of trees from a nursery in which I had worked in the fall of 1855, belonging to Joel S. Shearman, of Rockford, Ill. Among the several varieties were, I remember, the Duchess and the Haas. All went to dust before coming to bearing except two Transcendents and two Siberian crabs, which are alive today, thirty-seven years since setting at three years of age, having averaged a fair crop of crap apples every other year.

Several successive plantings of apple trees have all died before bearing, or soon after producing one or two crops.

I now attribute my failure mainly to the setting of defective trees purchased too far from home, for since I have been setting out apple trees grown in our Minnesota nurseries, satisfactory success has attended my efforts. Trees formerly purchased invariably had a black heart, which, I believe, was the cause of their short lives, and my advice to buyers of apple trees, who buy for a successful orchard, is to discard every tree that shows a black heart, as one might as well or better go without setting that year than to set a tree that is sure to die after taking up a few years of your time, and then disappoint you.

On starting an apple orchard, first buy healthy three-year-old trees, or if you live near a nursery where you can dig and set trees same day, and you can buy older trees, do so, as you will get results in fruit

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quicker. After you have got a healthy tree, trim all broken roots with a sharp knife and then place roots in a clay puddle, which tends to counteract the bad effects that the sun and wind may have had on the roots since being exposed to the air.

Select high and dry ground for an apple orchard, but do not let the lay of your land or quality of soil deter you from setting out at least some trees each year, for an apple tree will grow and produce fine fruit in most any kind of soil, but the high, well drained ground is best. I prefer ground slanting to the south, as my experience leads me to believe that the trees grow better, fruit quicker and better, while the wood ripens up earlier, which is very essential.

Hibernal apple six years planted, three years bearing, in grounds of A. H. Reed, superintendent of trial station at Glencoe.

My method of setting apple trees is to dig a hole about eighteen inches in diameter and from twelve to twenty-four inches deep, according to the size of tree. Mellow up the bottom of the hole with a spading fork, place the tree in the place prepared for it with the roots as nearly in their natural position as possible, and, holding the tree upright with one hand in its place in which it is to be left to grow, with a spading fork work the fresh dirt from the side of the hole onto the roots until covered. Then, if water is handy, I advise pouring in a

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pail of water, which packs the dirt closely to all the roots, making them more ready in starting growth. Fill up hole with as rich, fresh dirt as convenient, packing well about the roots. It is an excellent plan to pack sods or some material about the tree to prevent the wind from swaying it back and forth. I usually lean my trees to the southwest when setting, as heaviest winds are from that direction.

After the tree is well set, do not fail to give it a good trimming, and I mean by a good trimming cutting away two-thirds of its top, if it is very much branched. One should be guided somewhat by the amount of roots left on the tree. If there is left a good supply of fine fibrous roots, there is not so much need of severe trimming; but do not fear cutting back a newly set apple tree too much, as it is sure to put forth new growth the first year.

For a successful growth, apple trees should be well cultivated for five seasons after setting, or until the roots are firmly imbedded by growth deep in the soil, when the ground can be seeded down with almost any kind of grass without detriment to the growth of the tree but I would recommend alfalfa, alsike or red clover.

At least the first five winters after setting trees they should be mulched with some coarse straw manure, to keep the frost in the ground and prevent thawing and freezing in March and April and to enrich and promote growth.

I have found that the proclivity of different kinds of apple trees to bear is as follows, viz: Hibernals, to bear the third year after the setting of a three-year-old tree, when cultivated and mulched. Patten's Greenings and Longfields, fourth year; also Transcendent crab. Wealthys, the fifth year. Peerless, sixth year.

Strawberry crab trees produced well the eighth season from the setting of root-grafts in the nursery row; the Longfield variety, two years sooner.

The growing of apple trees, and the production of apples, has passed the experimental age in Minnesota, and I predict that within ten years we can not only supply our home markets but the great Northwest with all the apples needed.

But a very few years ago the crab and the Duchess were thought to be the only varieties of apples we could successfully grow, but now we produce more than a hundred varieties. The Baldwin, the Greening, the Roxbury Russet, the Ben Davis, the Jonathan and many other varieties are being produced in different localities of the state, and where any of these varieties are top-grafted into vigorous trees, like the Hibernal and Patten's Greening, they are proving quite hardy.

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So sure are we of the fact that this is to become a great apple raising state that we think this society should devise ways and means to induce every freeholder in the state to plant apple trees, plant them on farms as commercial orchards, plant them in their gardens, plant them in place of box elders around their dwellings, and the more planted the greater value will be added to their holdings.

The Propagation of Apple Trees. Every neighborhood should send one or more young men to the state agricultural college to learn the art of "root-grafting," so that each community may have some one who can, in an inexpensive manner, start successful apple raising. Obtain apple tree roots in the fall, pack them in your cellar in sawdust, select scions of the last season's growth of your most favored varieties of apples and have your root-grafting expert do the grafting in the winter and pack them for spring setting.

After freezing nights are over, set them on high, well cultivated ground one foot apart in rows four feet from each other. Every farmer should secure from twenty-five to a hundred root-grafts and set in his garden each year and transplant them at two and three years of age.

If you do not wish to wait eight or ten years for trees to fruit, go to your nearest nursery and secure a few trees three, four or more years old, but be sure and get those well dug with plenty of roots, and be sure and keep the roots damp and from sun and wind.

If you have bearing trees of undesirable apples, top-graft them at once with any variety of apples you choose, as a variety proves much hardier worked onto a bearing tree than it does onto a small root to be grown from the bottom up.

The process of top-grafting is very simple, and most any one after seeing it done once can do it. Select a few limbs on the tree whose fruit you wish to change that are from one to two inches through; saw them square off with a fine saw, split the stump in the middle with a grafting knife, or any other, if no knife made for that purpose is at hand; then insert a narrow wedge in the center of stump to open the split wide enough to insert the scion. The scions some claim should be cut in February or March and packed away in sand or sawdust, but I have had good success in cutting the scions from near-by trees immediately before grafting.

Cut your scion to be grown six inches long, having on it two or three buds. With a sharp knife make the large end, or bottom of the scion, wedge shape by commencing some two inches from the bottom,

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cutting part way through the bark, growing deeper as you near the end; then serve the opposite side the same. If the bark of your sawed limb has not split down straight and smooth, smooth it with a sharp knife and then insert a scion on each side and be sure that the inside bark of both scion and stump comes together before taking out your wedge. The scions will be held in the tight grasp of the grafted limb, and if properly waxed with grafting wax the sap is quite sure to flow into the scions and cause them to grow from one to three feet the first season, and if the scions are cut from prolific bearing trees you may look for the grafts to fruit in two or three years. The German way of finishing up top-grafting is to wrap a cotton rag over the grafted stump.

Undoubtedly the system of top-grafting of apple trees will bring to Minnesota many kinds of apples grown in many parts of the United States.

The Care of Apple Trees. The first six years after a tree is transplanted special care and attention should be paid to it. If from the wind or any other cause the tree leans too much, it should be righted and fastened upright or leaned a little to the south. Cut off all new sprouts where not desired to grow, and such inside limbs as are likely to rub together, and place a good coat of mulching of strawy manure around each tree after the ground is well frozen each winter. After six years a thrifty tree will take care of itself in the main. It may need some protection from the mice or rabbits.

Capt. A. H. Reed: In making my oral report I wish to say that the secretary intimated to me that I should make a better report in the future than I had in the past, but he did not mean me entirely, but all the rest of them. So in getting up my report I tried to do better than I have done in the past. What I lack in quality this time I have made up in quantity. (Laughter.) I am one of those who believe that this society is not doing enough to encourage the propagation and production of apples. I believe farmers all over the state should be encouraged to plant apple trees every year, and I believe this state is capable of becoming the greatest apple state in the Union. I believe now that the appointment of a vice-president for one congressional district provides altogether too much ground for him to cover. We ought to adopt some other rule in getting our officers placed where they can do more good in encouraging the propagation of fruit. If we could arrange for a superintendent in each county to go around among the farmers and show them how to plant trees and how to care for them after they are planted, I believe that almost every farmer could be induced to plant apple trees and would grow apples successfully. I also believe that we can produce here in this state any kind of apple produced in any part of New York. These all could be produced here

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as well as they can be produced anywhere else by top-grafting, and I believe if well protected the first, second, third and fourth years, that any number of them can be grown from root-grafts. Therefore, I want to see something done to encourage the propagation of apple trees all over this state more than has been done in the past.

The President: Capt. Reed is certainly very optimistic in this respect.

Mr. Geo. J. Kellogg (Wisconsin): Oh, he'll change his mind some day.

Jeffers Trial Station.

DEWAIN COOK, SUPT.

Strawberries were not as good as we anticipated; the Senator Dunlap bore a much better crop than did the Warfield or the Splendid; the Dunlap also wintered much better than did the other varieties named.

Red raspberries were also below expectations. The varieties we are growing are Turner, Cuthbert, King, Superb and Brandywine.

We got some fruit from all these varieties, except the King, which is a total failure at this place. We have been growing this variety for several seasons, but shall dig them all out next spring.

We set out in the spring of 1907 six plants of Prof. Hansen's hybrid red raspberry, the Sunbeam. These plants made a late but not a strong growth last season and killed back somewhat during the winter, and we got no fruit from them this season, but they have now a very healthy and vigorous appearance.

Those twelve apple trees that were grafted on Pyrus baccata roots, that were sent here from the central station at St. Anthony Park the spring of 1905, have been growing here for four seasons. They have been given the best of care, yet they have done so poorly that I have to consider them as a failure.

We have during the last twenty-two years tried many varieties of the Russian willows and poplars. They are all gone now except some of the laurel leaved willow and the golden willow (*Salix aurea*), which latter is not hardy like our common white, or grey, willow. It has no value as a timber willow, its only possible value being as an ornamental willow when it is young. The bark gets deeper in color as the tree gets older.

The laurel leaved willow (*Salix laurifolia*) has also had its day and has proved to be of no value. We now have a double hedgerow of them about twenty-five rods long, that stands from twenty-five to

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thirty feet high. The lower branches from the ground up to eight or ten feet are most all dead, and I have pruned them off. The live parts of these willows are infested with a large warty fungus in the bodies and in the branches. I call them root galls. I have been growing this willow some twenty-one or twenty-two years. It is no hardier than the Lombardy poplar, and it has no value for any purpose.

The collection of hybrid plum trees got from Prof. Hansen the spring of 1908 are, I believe, the most promising lot of fruit trees that has been planted at this station for several years. These young trees, including the sand cherry and peach hybrids, all made a vigorous growth and all have fruit buds developed for next year's fruiting. One of these trees, a cross between the De Soto and a Japan plum, had foliage after the frost came that was nearly blood red. These hybrid trees so far have grown more vigorously than have the native plum trees, planted with them in the same row.

Winter conditions at Dewain Cook's trial station at Jeffers.

The plum crop was almost a total failure. My two trees of the Rockford bore a nice crop of fine fruit; my five or six trees of the Paul Wolf also bore a fair crop. This latter variety has proven itself a reliable cropper, as also has the Rockford. The Wyant bore nothing; the fruit buds were evidently dead before the trees bloomed. I examined a great many of them just as they were ready to bloom and could not find a live one. I also examined and found many fruit buds of other varieties of native plums had also winter-killed.

A few trees of the freestone Wolf bore very well, but most of them bore nothing. The very finest clingstone Wolf plums, which we saved for our county fair, were gathered from a tree set the spring of

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1886, and our very best De Soto plums, which we also saved for the fair, were grown upon a tree set out the spring of 1885. Many varieties of our native plums and several of the Japanese-American hybrids failed to bear even specimens.

But one variety of Japanese hybrid, sent here under the initials B. A. Q., made, considering the season, a remarkable showing. We set three grafts of this variety the spring of 1906, on the north side of a young bearing Wolf plum tree. These three scions made a rampant growth the first season and developed many fruit buds. The spring of 1907 they set some fruit but all dropped but one specimen, which matured. But the present season (1908) these three branches, each five or six feet long, were just loaded with fruit. We tied the branches up to the main tree to keep them from breaking. Much of this fruit dropped to the ground before reaching maturity, having been stung by the curculio, but about the 15th of September we gathered over one hundred plums from these three grafts. They were perfect, not a rotten plum among them, and all were larger than any native grown, while the Wolf plum tree, upon which these three grafts were grown, did not bear even a specimen plum. It seems to us that plums for the coming generation, for home use and for commercial purposes, will be of the American and Japanese hybrid class. As to their hardiness, they have, so far as I have tried them, proved to be nearly as hardy as has our native plums, and some of them are more productive.

The apple crop was exceedingly light, and the apples were smaller than usual, and the birds got most of the fruit—they would not wait for them to ripen—so we had not much fruit to market. We had plenty of time to mow weeds, plum sprouts, etc., in and about our orchard, and prune the fruit trees and the windbreaks, and we now have our fruit and experimental grounds in better condition than ever before and are living in hopes that better things are coming next season.

FRUIT GROWERS SHOULD ORGANIZE.—"I would be glad to see the fruit growers in every section of the country organized into local societies. The local organization could then be made the unit from which a more extended co-operative and concerted movement could be formed, having for its sole object the proper distribution of our large crops. This, in my opinion, will be especially desirable and necessary whenever we have a general apple crop throughout the United States.

"I do not mean the formation of an organization to take charge of and sell the apple or other fruit crops of the state, but that through a co-operative effort a plan may be evolved that will be an instrument through and by which each association or individual can market their apples and receive the same benefits and at the same time have full charge of the sales of their products, whether it be on track or in the market to which they have shipped."

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Montevideo Trial Station.

LYCURGUS R. MOYER, SUPT.

As is well known, this station is conducted on the theory that apple raising is not all there is to horticulture. We should encourage also the garden, the lawn and the park. It is a sign of progress in the right direction that through the generosity of one of our old settlers, now deceased, the city of Montevideo has become the owner of a naturally wooded park—the J. Harley Smith Park—containing thirty-five acres. To the park system the city council has also added a wooded ravine of four acres. These parks, together with the thirty-five-acre campus of Windom Institute, will give breathing places for our citizens for a long time to come. The cemetery has been planted, and there are many fine shrubberies around city residences.

Perhaps it may be well to review once more the material that seems to be well adapted to prairie lawn-planting:

The earliest shrub to bloom is the Russian almond (*Prunus nana*), and one is always glad to see its bright pink flowers early in April. The silky, whitish young leaves and the white flowers of the Dwarf Juneberry are next in evidence. This shrub is found native here, growing in the crevices and ledges of granite rocks. It is one of the *Amelanchiers,* probably *A. oblongifolia,* but its exact specific name is not known.

The Buffalo-Berry (*Shepherdia argentea*) is another April bloomer, but its flowers are very inconspicuous. It is worth while to have this hardy shrub for the sake of its beautiful red berries, which are produced late in the season and are then very showy.

Another very early blooming native shrub is the Red-Berried Elder (*Sambucus racemosa*). One who has plenty of room can scarcely afford to be without it. Its red berries in June are very beautiful. Unfortunately the birds are very fond of the fruit, so it does not remain long in the prairie regions, as here bird food is scarce. This shrub is short lived but propagates rapidly from self-sown berries; so one may cut out the old bushes and let the seedlings grow.

Complaint has been made that the Caraganas are subject to leaf rust in midsummer. This is true, but their fresh green leaves and bright yellow flowers in early spring are so interesting that one cannot afford to be without them. Where a tall, tree-like shrub is desired one should plant *Caragana arborescens.* If a straight, erect shrub about eight feet high is wanted, then *Caragana frutescens* will fill the bill. If one wants a bushy shrub about three or four feet high, one that will flower profusely, he will do well to plant *Caragana pygmae. Caragana*

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microphylla seems to be a still smaller shrub, but it has not been under cultivation long enough here to tell exactly what it will do.

The Bush Honeysuckles have often been spoken of in these reports. They are well adapted to prairie planting. The typical *Lonicera tartarica,* in both its white and pink forms, is well known to planters; but the variety *speciosa* is not so often planted. It has larger, deep pink colored flowers. The variety *parvifolia* has small white flowers and orange colored fruit. *Lonicera morrowi* and *Lonicera ruprechtiana* both do well. Their flowers are small, but their foliage is fine and their fruit showy. The dwarf *Lonicera spinosa,* sent out as *Lonicera albertii,* has been growing here for a long time but kills back a good deal and seems not likely to become a permanent success.

Lonicera bella candida and *Lonicera bella albida* have both been planted. These are presumed to be garden varieties of the bush honeysuckle. They will be reported on later.

Lonicera sullivantii and *Lonicera dioica* are native climbing honeysuckles, but on the prairies they should be treated as low growing shrubs. The best climbing honeysuckle for prairie planting is *Lonicera sempervirens.* The Japanese species are scarcely hardy.

The common varieties of Lilac, *Syringa vulgaris, Syringa vulgaris alba, Syringa vulgaris Charles X., Syringa josikaea* and *Syringa japonica,* are now offered by all nurserymen and ought to be generally planted. The last three bloom in June and prolong the lilac season for about three weeks. *Syringa villosa* is a rampant growing shrub and should be given plenty of room, while *Syringa japonica* is a fair sized tree.

The earliest Mock Orange to bloom is the European species, *Philadelphus coronarius. Philadelphus pubescens* is a little later and much more vigorous in habit. *Philadelphus gordonianus* is also a large shrub. *Philadelphus zeyheri* and *Philadelphus laxus* are supposed to be garden varieties. They are both very beautiful and desirable. Another graceful hybrid shrub is *Philadelphus lemoinei.* It is of more moderate growth, while *Philadelphus microphyllus* is quite dwarf.

The planting of Barberries is commonly advised against in wheat raising regions as the plants are said to be the host of the wheat rust in its aecidial stage. Nevertheless *Berberis vulgaris* is a very hardy and beautiful shrub. Its purple variety may also be planted as an occasional specimen. *Berberis amurensis* is even more vigorous and beautiful, while *Berberis thunbergii* is one of the most beautiful low growing shrubs that we have.

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The rose rust (*Phragmidium*) is again troublesome. It has long prevented the cultivation of the wild Prairie Rose (*Rosa pratincola*), and this season it was very bad on *Rosa blanda* and on the pink forms of *Rosa rugosa*. The Russian Olive, or Oleaster (Elaeagnus angustifolia), is almost too tree-like in habit to be classed as a border shrub. nor does it seem to stand crowding well. Some specimens of considerable age show dead tops and limbs in such locations. It propagates so readily from seed that it is easy to have new trees coming on. Like most foreign trees, it will probably prove to be short lived.

Probably the best Spiraea for general planting is Spiraea Van Houtii. It does well anywhere. Some surprise was expressed that Prof. Hansen should find *Spiraea salicifolia* tender at Brookings, when every botanist knows that it is a common wild shrub around prairie sloughs. But it seems that our prairie Spiraea has never been properly identified, and that it is not the Siberian *Spiraea salicifolia* at all, but *Spiraea alba*. Prof. Hansen imported his shrub from Germany and found it tender. Our prairie spiraea has been adapting itself to its environment for thousands of years and is hardy.

Sorbaria sorbifolia is often classed as a spiraea and is at home in any rich corner where it can have room to spread. It has an inveterate habit of sprouting from the roots and never grows to be very tall.

Among the Russian apples that have come into bearing, perhaps the best in point of quality is No. 322, an apple that apparently belongs to the Anis group. It ripens about a week after the Blushed Calville, is of very high quality and excellent as a dessert apple. It is a little larger than the Anis. It remains to be seen as to how productive it will prove to be.

Judge L. R. Moyer: The position that the Montevideo station occupies is a peculiar one. Most of the stations have been conducted on the theory that horticulture means apple raising. Montevideo stands as a protest, although we have a few apples. It is mostly devoted to ornamental stock. Of apples, those we have had on trial were nearly all those received from Prof. Budd about twelve years ago. Of all of these perhaps the most important is the Hibernal—that has done well; also the Blushed Calville, which is one of our best summer apples, one we think the most of, and that is doing well with us. There is one which appears to be a seedling of the Anisim, No. 322. It is a little larger than the Anisim, of better quality, and a fine eating apple. There is another one of Prof. Budd's apples, No. 327; it is a large apple; it is very much like the Hibernal and has some markings of the Anisim.

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QUESTION HOUR.

Question. What is the best early apple for the farmer of Minnesota to plant?

Mr. Schutz: I find that the Tetofsky is a very good apple, but it is necessary to harvest it fifteen minutes after it is ripe.

Judge Moyer: The Blushed Calville is very good. It is about like the old Early Harvest in York State. Mr. Cook can tell you all about it.

Mr. Cook: I never had much experience with it. I did not think much of it because it scabbed so badly. I do not think it a good apple and do not think the tree stands well. I had it two or three years ago, but it failed for some reason or other. It scabbed so badly that it was not worth much. To my notion the Yellow Transparent is the best apple we have. It is good for home use and also for a market apple. It blights quite badly in some localities, but I think the Yellow Transparent is far ahead of the Tetofsky and the Blushed Calville.

Mr. Schutz: Is it earlier than the Tetofsky?

Mr. Wedge: They ripen almost at the same time with me. I was going to ask Mr. Cook in regard to the ripening of the Yellow Transparent. I was going to ask if it does not blight as a young tree. It is with me very much like the Transcendent crab. It is still growing and produces lots of apples. I do not like to have such a tree in our orchard. I do not like a tree that is blighting all the time. The Tetofsky was exactly described by Mr. Schutz. If the fruit would only hang on the tree, it would be all right.

"What, if anything, do you know about the Windsor Chief, of Wisconsin?"

Mr. Philips: Mr. Plumb introduced it, and in certain localities they are reported doing well. It is claimed it is a good winter apple. I saw it on exhibition in the middle of March on the state line south of where Mr. Kellogg lives. I went down last summer and got some scions, and I was very favorably impressed with it. I told the man it was a good winter apple, and he said it was only a fall apple. The trouble with the Windsor is that it blights badly and is not a heavy bearer. Mr. Kellogg knows the Windsor; he lives down there and knows it well; let him answer.

Mr. Kellogg: The Windsor Chief is an apple that is quite well thought of in the southern part of Wisconsin. It originated in Dane county and was brought out by J. C. Plumb. It will be shown at our state meeting and is a very nice specimen. While the apple is not of a very high quality, except for the blighting of the tree I find no objection to it. I think with age it will be productive.

The President: At our place it blights very little, gives promise of bearing and is what we call a winter apple.

Mr. C. G. Patten (Ia.): In central Iowa, east of Des Moines, the Windsor is doing very well, and it colors up more with us than it does in Wisconsin. Mr. Harrington, a large orchardist, is growing it with success.

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Owatonna Trial Station.

THOS. E. CASHMAN, SUPT.

Nothing new has developed at the Owatonna trial station since my last report. The fruit crop the past year was almost a total failure. A part of a crop was promised early in the season, but it kept dropping off until there was nothing left, and the last winter was one of the most favorable in the history of the country: therefore nothing has developed which would tend to show quality of fruit or hardiness of trees.

We have followed the old routine of cultivation, but unfortunately did not spray the trees early in the spring, which, I believe, accounts for the loss of a large part of the fruit there was on the trees. We sprayed twice after the apples were formed, but it was then too late to do much good. The trees have made a good growth and are very healthy and vigorous, and we hope they will bear enough another year so we may have something good to report.

The past summer has again reminded us of the necessity of planting our apple trees on high land with a clay sub-soil. Those who have only flat land must install a complete system of tile drainage or give up the idea of raising apples.

Then again, our planters must set their trees deep—not less than twenty to twenty-four inches. The majority of trees are grafted on tender roots, and if not set deep enough to place the roots below the point where they may thaw out during the winter, the roots are liable to be injured.

We must not overlook the fact that if we wish to build up a strong, vigorous tree, one that will pay big returns after it is out seven or eight years, we must give that tree thorough cultivation; in fact the same amount of cultivation should be given the tree as a hill of corn, and the good farmer knows how necessary it is to cultivate and keep the soil stirred around the hill of corn during the growing period. Cultivation will assist in placing the land in good condition if too wet and will help retain the moisture if too dry. The fact is that a tree that receives sufficient cultivation will make three times as much growth as one that is not cultivated at all, and will be able to produce a large crop of fruit much sooner than the trees not cultivated.

After the trees attain the age of ten years, which will bring the well-developed tree into full bearing, we may seed down to clover with good results—but remember this should not be done until after the tree has attained almost its full growth.

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Another very important feature necessary to produce good fruit is to combat the insect pests and diseases which afflict the bearing tree. Spraying is the solution of this problem. Spray thoroughly before the tree leaves out in the spring; spray again just before the blossoms begin to fall off; and the third time when the fruit is half formed. If this is done, the fruit will be well formed and free from scab and worms. If trees are sprayed, the apples will cling to them until fully ripe, unless blown off by severe storms, for they are thus kept in a healthy condition, and it is spraying that does the business.

A $5.00 to $7.00 pump will suffice to do the work in an orchard not to exceed two acres. If larger, a machine that will do the work more rapidly should be used. The ingredients to be used in spraying early in the spring are six pounds of blue vitriol, one pound of paris green, six pounds fresh white lime dissolved in fifty gallons of water. After the trees leaf out, the paris green should not be used.

Sauk Rapids Trial Station.

MRS. JENNIE STAGER, SUPT.

The last spring we were very hopeful of a good harvest of fruit, as everything looked favorable. The apple and plum trees were literally covered with blossoms. Then came in May a very severe frost, and the consequence was we only had a very few of the very latest blossoming varieties that bore anything, but those bore quite heavily. Raspberries, currants and gooseberries also felt the effects of the frost.

We also lost quite a number of shrubs; hydrangeas, spiraea and so forth were killed. Even the blossoms of the wild hazel nuts were ruined, so those nuts, of which we generally have plenty, were lost to the children, who take delight in gathering them.

However, we had quite a harvest of strawberries through keeping them well covered until quite late.

Of flowers and other things that blossom late, there were quite a number. At this time we are all hoping for a prolific season the coming year.

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Waterville Trial Station.

SETH H. KENNEY, SUPT.

It may not be necessary to state that I have been working more than twenty-five years to find out some way that we could grow commercial apples in Minnesota. It looks as if the top-working of the more tender varieties, with which years ago we made failures, were to succeed by grafting them on hardy hybrid crabs, selecting kinds of crabs adapted to the variety top-worked. It seems as if the society, with so many experimenters, would in a few short years determine to a certainty what we as a society can accomplish. A letter dated Boston, Nov. 26th, sent by a horticultural friend said: "The steamer Canadian, that just sailed for England, on board 3,000 barrels of apples, 153,000 bushels of wheat," and that "every ocean steamer leaving for Europe is carrying hundreds of barrels of apples to Europe," and asked why we in Minnesota could not grow winter apples. Most of these apples came from Maine and Nova Scotia, where it often goes forty degrees below zero.

Seth H. Kenney.

There has been one difficulty that, I hope, I have in a great measure overcome. The sap in the small trees starts up during the warm days and afterwards in a cold night this sap forms ice and bursts the bark, ruptures it and raises it off the trunk. The new screen protector, that I made in November, has on one side a board which I turn towards the sun side so as to keep off the sunshine. That, I think, is needed later in the spring to get the best growth, and at the same time the protector keeps the rabbits and mice entirely away. As every one can make and try this way, I hope they will make a few and test them. (For description of this protector, see page 399, Report of 1908.)

Last year, following the great crop of two years ago, was the lightest crop for many years. The Alaska crab is top-worked now with twenty varieties, mostly commercial apples. Every kind so far has produced fruit. Top-worked, none has failed to live and grow. The same may be said of the Gould crab as a stock. Getting but few apples from several Peerless, I have top-worked them with Wealthy. They bore a few this fall, but the experiment is not old enough to determine its value.

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All the apple trees have a good supply of fruit buds for next season. I think the limbs of the top-worked Malinda have too many fruit buds, and it is my purpose to thin some of them out.

One point of special interest in apples is that they will do well on one crab and fail on another; another is that apples that do not fall too soon from the trees should be sought after. The Malinda and Northwestern Greening both are valuable in this respect. Both proved ironclad on the Alaska so far as tested.

We have adhered to mulching for a great many years; have mulched even the one-year-old crab roots. It is pretty certain while so young and tender it must be of great advantage to the next season's growth.

Two years ago I obtained from Prof. Hansen a raspberry called "Sunbeam," a red berry that bore a good crop the first year. Last spring I bought three dozen more of the same kind. I have a fine stand, but on account of droughts they did not do as well, but think it was not the fault of the variety. The Loudon I plowed up last fall; it did not do well the past two seasons with me.

Strawberries. Clyde and Senator Dunlap did not have one-fourth a crop. The same with others in this section.

Gooseberries were a failure. I think the late frost hurt them. The Elliot gooseberry, Carrie, made a good growth; set last spring.

Currants. About one-half crop. Varieties, Red Dutch and White Grape.

Plums. Twelve kinds; all a failure from a late frost.

Mr. Brackett remarked at the last meeting that there were peaches raised near Des Moines called the Ironclad in large quantities, and he thought they could be grown in Minnesota. By his direction, I sent to J. W. Pearson, Michelville, Ia. I now have twenty-one trees that average some more than two feet each in height. In November I mulched the roots and covered some of the tops with peat, obtained in the marsh, to give them good protection while young. Mr. Pearson says they are a freestone and that the pits produce the same variety as the parent tree, which is growing yet twenty miles east of Des Moines. It is twenty-seven years old. The age of the parent tree would indicate that it was hardy stock. I kept some Whitney No. 20 apples that were carefully picked when turning red that are still good to eat, showing it to be a good keeper; also some Malinda apples, kept in a common cellar, now nearly fourteen months old.

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I am growing the Missing Link apple both on the Alaska and Gould crab that I could not make grow on orchard trees or other crabs. It shows that we can accomplish by top-working what we could not in any other way. Strawberries and sand cherries No. 7 and No. 8 not yet in bearing. Strawberries set last spring; sand cherries, two years ago. A very large list of apples on different crabs to test not in bearing yet.

I am also trying the Hibernal, and I have now quite a number top-worked on these. Some years ago I got some tender varieties and top-worked them on a great many varieties of crabs. I lost them all except on the Gould and Alaska crabs. I have continued to grow those apples, and if you want to find the hardiest kind of crab apples, those that will give you the most vitality, I think you cannot do better than to use the Gould and the Alaska. I top-worked nine years ago fifty Duchess trees with Malinda, and last year they bore full. The Duchess apple tree has vitality enough to sustain a good many top-grafts, but the work is of such a nature, and requires so long a time to demonstrate, that I do not believe I shall live to see the best results from top-working.

I got some Bartlett pear grafts from Capt. Reed, and as the Peerless apple leaves resemble the leaves of the pear, I put some pear grafts on the Peerless tree, and they look well.

The President: I have seen some of the finest pears on the common black thorn apple I have ever seen.

Mr. A. Brackett: I have grown them, and by the time they got valuable they broke off.

Mr. H. F. Busse: I have tried them all, but last spring they were all dead. They grew one season nicely until the following spring, and then they would leaf out and look as though they were half dead, and in a few weeks they would all be dead.

Mr. Kellogg (Lake Mills, Wis.): I went to an orchard some seven years ago and got two pear trees. These have never shown a bit of blight. One tree is now bearing and producing pears of a good quality.

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West Concord Trial Station.

F. J. COWLES, SUPT.

At the time of our midsummer reports everything looked favorable; there had been an abundance of rain, so that a good growth was insured for all trees. This was a good thing, for dry weather followed which checked the growth, causing the trees to ripen their new wood well, and all are apparently in good condition for winter.

The apple and plum crop was a failure with us this year, but we are looking forward to a good crop for another year, as the fruit buds are many. We are testing a number of Mr. Patten's seedlings, but are unable to report on them this year. However, shall watch them and report on them later. We have been trying the Yahnke, but it has not done well with us. Perhaps it is not adapted to our soil. We have a heavy black loam with a yellow clay subsoil.

A showy bed of Achillea, "The Pearl," on the lawn of F. J. Cowles, Supt. of trial station at West Concord.

Our crop of strawberries was good, and being later than usual the price was good. The drought through July, August and September was very severe on newly set beds. I fear that a great many plants have not roots enough to mature a crop of fruit for another season. Of course, a great deal depends upon the winter and spring.

Our raspberry crop was fair; the principal varieties were King and Ironclad for the reds, and Older for black; but Older disappointed us this past year for the first time since we have tried them. They

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winter-killed badly. We seldom cover them and always feel sure of a good crop, but last winter proved too severe for them. I like the King much better than the Ironclad, as it is so much more easily picked.

I had but very few currants or gooseberries. I am trying the Carrie gooseberry, but cannot say much about it this year except that it made a good growth the past year.

Grapes did not bear so much fruit as last year, but what they did have ripened, and the quality was good.

Blackberries did well without having had any winter covering, which is a very unusual thing.

Evergreens came through the winter in good condition, except the arbor vitae. These blighted very badly. This seemed to affect the smaller trees much more than the larger ones. In our large hedge scarcely a branch was blighted.

Wealthy, Whitney and Peerless apples for street trees, at West Concord.

We are very much pleased with the Norway poplar that we set out last spring. From cuttings it has made a growth of from four to six feet. We believe it to be a good tree and one that should be planted more. I believe with Mr. Harrison, why not plant more of the "beautiful" in our front yards, such as spiraea, hydrangea, snowball, paeony and phlox. These are all doing well with us and are very hardy.

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F. J. Cowles: The apple and plum crop with me was a total failure this year. I have about four or five hundred trees, and I had scarcely any fruit. There is one experiment I have tried I would like to speak of, and that is the planting of apple trees on the outside of the sidewalk in towns and villages. Some may laugh at that idea and think it is a failure, but about eight years ago a gentleman came to me and wanted to buy some ornamental trees to plant on the outside of the sidewalk. I recommended to him the planting of apple trees, but it was a long time before I could persuade him to plant them. He picked out some nice Wealthy, Whitney No. 20 and Peerless, those three varieties, took them home and planted them, and then went to his neighbors and told them they would have to do likewise, and now we have the streets in our town lined with these fruit trees. They are bearing and have been for a number of years, and some of them have sold a number of bushels of Whitney No. 20 and Wealthy from those trees. The great cry was that the boys would steal them and break them down. That has not been our experience with those trees. The boys have let them alone, and the people are getting fruit, and they make a beautiful shade tree, and the idea is very well liked. (Applause.)

The President: That means an endorsement of planting apple trees along the roadside in West Concord.

Mr. Probstfeld: I would like to shake hands with those boys.

Mr. Cowles: If you plant them where the boys can see them every day, they will not bother the trees. I would think about from fifty to seventy-five were planted eight years ago, and I have never noticed but one tree that was in any way broken. The people who lived in the vicinity of those trees looked out for them, and the boys did not bother them, and if they did it was mostly young fellows with their girls that were out in the evening.

Iowa State Horticultural Society, Annual Meeting, 1908.

LE ROY CADY, ST. ANTHONY PARK, DELEGATE.

Your delegate arrived in Des Moines early in the morning of December 8th. After breakfasting with a number of the northeast Iowa delegates we attended the opening session of the meeting. About twenty-five were present at this session. President Bomberger gave his address as president, and reports were read by the secretary, treasurer and directors. The directors correspond to our vice-presidents, except that they have a little more of the managing of the society's business. The secretary, Wesley Greene, reported about 200 members, mostly life members. A monthly journal has been issued during the year, which has gone into about 1,200 homes. A number of special bulletins and the yearly report have also been issued. The journal has contained original matter, no use being made of the annual meeting dis-

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cussion and papers except in the Annual. Mr. Greene thought the horticultural society appropriation should be increased from $4,000 to $6,000 by the legislature, and a resolution to that effect was carried.

The reports of the directors showed not much over half a crop of most of the fruits. These reports and the discussions following them showed that not nearly as many apples are being grown in Iowa as could be grown.

Prof. Pammel, of Ames, reported that fungous diseases had been less prevalent in Iowa this year than usual. G. R. Bliss, of Ames, gave a good paper on horticultural development in Iowa. He said brains and muscle raised corn in abundance, and he could see no reason why apples could not also be produced in quantity. He declared home grown fruit better than western. There would be no danger of overproduction in a locality if there were proper means of distributing. Co-operative associations would help a good deal. The fact that so many Iowa farms are run by renters accounts for so little fruit being raised.

The session Tuesday evening was in charge of the Iowa Park and Forestry Association. Mr. Euclid Sanders, of Iowa City, discussed the municipal park. Land should be bought early, while it is cheap, and the parks should be located in the most congested districts of the city. Great care should be taken in planting to get the best effects, and at the same time the parks should be used by everybody. Ray Weirack thought that playgrounds decreased the need of police in a city. They provided amusement for the boys and girls and kept them off the street. There should also be public halls or meeting places in every district.

Prof. A. T. Erwin read a good paper on "Cemetery Improvement and Maintenance." He advocated selling the lots high enough to provide for their maintenance when all were sold. Cemeteries should be natural, with no more driveways and walks than are actually needed. There should be no mounds or tall markers.

Wednesday afternoon the session was in charge of the Iowa florists. About the same list of roses and vines was recommended as by our own society. Prof. Sumner, of Ames, suggested the adopting of resolutions asking for the inspection of spraying materials and insecticides, which was done. The discussion on this resolution brought out the fact that no one but a druggist can sell an insecticide in Iowa. A committee was appointed to ask the legislature to repeal this law. C. P. Page read a paper strongly urging Ames College to establish a

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floricultural course and suggested a partial program for it. He said there was always a scarcity of good florists.

The Wednesday evening session was devoted to rural education and the improvement of home surroundings on the farms. These topics brought out some very interesting discussions and showed that the people of Iowa are thinking about their country schools and hope to improve them.

An attempt was made to raise the life membership fee to $10, but it was voted to leave the fee at $5. A recognition button was adopted by the society.

Thursday afternoon there was a joint session with the Plant Breeders' Association. A number of papers were read on plant breeding subjects, but there seemed to be a lack in interest by a good many present. A. B. Dennis, of Cedar Rapids, told of his work with chestnuts. C. G. Patten showed some of his cross-bred walnuts and also some plums.

Thursday evening the old officers were re-elected for another year. The meetings were held in the society's rooms in the State Capitol. This will seat about 125 people comfortably, and was not crowded at any of the sessions. Fifty to seventy-five was the average attendance. Good papers were given on all the subjects and deserved a larger audience. A good showing of apples for the year was made in the lobby of the Capitol. A number of other agricultural meetings were in session in Des Moines at the same time, which had a tendency to reduce the attendance at the horticultural meetings.

A very fine library belonging to the society is kept in the meeting room, and can be made use of by the members at any time. Representatives were present from the Illinois and Wisconsin societies, and all were treated royally by the Iowa people.

Mr. Seth Kennedy (Waterville Station): The main line of work at my place is to find out the hardiest crabs that will sustain the greatest number of varieties of eastern apples, with a view to learning what we may expect to grow here. I have had considerable experience. I have twenty varieties on the Alaska crab, and I have a number of varieties on the Gould crab.

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Annual Meeting, 1908, Washington State Horticultural Society.

H. H. S. ROWELL, LEWISTON, IDAHO.

The fifth annual meeting of this society was held at Spokane, Wash., Dec. 7 to 12, in conjunction with the National Apple Show. From 400 to 500 members of the association were present, and the total attendance at the National Apple Show for the week, despite the unfavorable weather, was over 100,000. The association has about 1,000 members, and is a very active organization. The retiring president was H. M. Gilbert, of North Yakima, and the president for the ensuing year is J. L. Dumas, of Dayton. The next meeting will be held at Wenatchee, which captured the lion's share of the $35,000 in prizes at the apple show. Washington took fifty-eight of the eighty-five prizes, and Wenatchee won twenty-five of the leading ones. The most perfect single apple was a Wolf River, weighing thirty-one ounces. The city of Spokane was an apple show in itself, nearly all business places being beautifully decorated with fruit. The chamber of commerce gave a handsome banquet to the members of the association.

The rich returns from many orchards, and the rapid development of irrigated orchard districts, has aroused intense interest in the subject of apple culture and enlisted the energies of many skilled horticulturists. The sessions of the association were full of profitable discussions. Some of the leading points brought out were: the imperative necessity of thoroughness in spraying, the value of co-operation and organization among fruit growers, and the need of developing both home and foreign markets. As Dr. Granville Lowther, of North Yakima put it, "fruit growing teaches the lesson of co-operation or brotherhood—the essence of morality."

Prof. John Craig, of Cornell University, stated that there were practically no commercial orchards in Europe; that the best American fruit will find its best market at home; and that the best apples of the future for this region will be originated here. He said that the foreign market demands color, and that uniform grading was more important than quality in British markets.

President Bryan, of the Washington State College, said that rural education and good roads were closely related; that rural schools were too small; that training in scientific methods is needed, allowing pupils to find facts for themselves.

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Prof. A. L. Melander, of the state college, at Pullman, showed, by results of experiments, that one spraying, properly applied, is enough for the codling moth (perhaps even for two years); using arsenate of lead, one to fifty solution, applied in coarse spray (bordeaux nozzle) with a 200-pound pressure, from above the foliage, from a tower or with a hooked rod. He cited the case of one man who had formerly sprayed eight times and had eighty-five per cent of wormy fruit, who now sprays once and has ninety-nine per cent of good fruit. Another gets all good but one-tenth of one per cent with one spraying, because it is properly done. Prof. Melander's methods and experiments are described in Bulletin No. 77, of the Washington State College, at Pullman, Wash., and can be obtained upon application. The college has an experimental farm and gives short courses, as well as regular courses, in horticulture and agriculture.

Prof. John O'Gara, of the National Bureau of Plant Industry, dealt with diseases of pomaceous fruits. He maintained that pear blight is caused by a small germ, a microscopic plant, which multiplies by division and does not live in the soil or fly in the air, but lives in the tissues of the tree, spreading by insects, etc., and must be cut out in the winter time, using a gouge on infected portion of tree body.

Prof. W. S. Thornber, of the Washington State College, spoke of commercial apple culture. He advocated early plowing with California disc plow, frequent harrowing and cover crops of vetch, Canada pea or crimson clover.

Prof. R. Kent Beattie, of the Washington State College, told of experiments with sulphur-lime wash for apple-scab. He used the 1—½—4 formula, and obtained ninety-five per cent good fruit, with one spraying, applied with pressure of 200 pounds, through a bordeaux nozzle. He applied the sulphur-lime wash during the growing and blooming season. He advised the planting of only one-year-old trees, and twenty-one feet apart.

The Porter bill, now before Congress, which proposes to increase the size of apple boxes, was the subject of a paper by F. Walden of Seattle, who showed that the present box has a capacity of a Winchester bushel, even measure, or 2,151 cubic inches, the bill proposing to make it 2,564 cubic inches, by adding 413 cubic inches, though the bulge and pressure in the present boxes adds about the same amount. The new measure would be a heaping one, without the bulge. The association adopted resolutions, opposing the bill.

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E. H. Shepard, of Hood River, Oregon, argued that there was no problem of over-production, but one of distribution, that organization was necessary for marketing, in the interest of both consumer and producer.

There were many other profitable papers given, including one by C. L. Smith, formerly of Minnesota, now institute lecturer of Spokane, on "Apple Growing without Irrigation." The meeting had visitors from many distant parts of the United States and foreign countries. It was regarded as a good school for horticulturists.

Annual Meeting, 1909, Wisconsin State Horticultural Society.

E. A. SMITH, LAKE CITY, DELEGATE.

I had the pleasure and honor of representing the Minnesota State Horticultural Society as delegate to the Wisconsin State Horticultural Society at their annual winter meeting, at Madison, which occurred Jan. 12th to the 14th inclusive, and report as follows:

At the opening session there were about 160 people present, and this attendance continued until the close of the session. The programs were very interesting and the people very much interested—so much so that many of the discussions were cut short. The number of papers upon the different programs ranged from four to six, and in most cases these were too many. The writer regards the discussion of even greater importance than the paper itself, for it brings out the thoughts of a number of practical men who are scattered over a wide range of territory, and their experience is generally interesting and valuable.

The following papers were of special interest to the writer: "School Grounds and Gardens," by Prof. J. W. Livingston, Plattville, Wis., in which the writer took a very high stand for the maintenance of morals in schools, and the improvement of the exterior as well as the interior, of school grounds, especially referring to the influence which these things have upon the pupil.

The second paper and talk of special interest was that of M. O. Nelson, Park Commissioner from Minneapolis, subject, "Our Duty toward the Landscape." This talk was illustrated by some very beautiful lantern slides, many of which were familiar to members of the Minnesota Horticultural Society, who had the pleasure of attending their last session and witnessing these views. Mr. Nelson's talk was very fine.

In addition to the program, there were printed forty-five questions which were supposed to be taken up when the hour arrived for the

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question box; but that hour failed to arrive, so that out of the forty-five, only six of the questions were discussed, and those very briefly.

The annual banquet Wednesday evening was most successful, and seventy-eight people sat down to the table at 7:30 o'clock. The banquet and the program were not completed until 11 o'clock. An orchestra was present which furnished excellent music, and the speeches were exceptionally good.

In the premium list $146 was the amount offered for 135 exhibits. The writer counted 160 plates of apples, one of pears, and three of grapes. In addition, there were about twelve plates of fruit exhibited from Oregon and Washington. This fruit attracted considerable attention, was highly polished, hand-picked, and presented a better appearance than any other fruit in the hall. The Wisconsin exhibit, though lacking in quantity, was generally excellent in quality. There were at least twelve varieties which the writer has never seen on exhibit in Minnesota.

In the course of the program, the Newell apple, recommended for trial by the fruit committee of the Minnesota Horticultural Society, received some very hard knocks. First, as a fruit, it is inferior in quality, is irregular in shape and unattractive in color. Second, the tree is inclined to blight, especially as a young tree. Third, the wind is apt to break the tree down at the crotch, it having a very poor shoulder for its support. Fourth, after the fruit is picked and placed in the cellar, the moisture seems to exaporate, and the apple becomes withered. Specimens on exhibit attested to this fact.

There were a few plates of the Windsor Chief on exhibit. This variety, which was highly spoken of at the winter meeting of the Minnesota Horticultural Society, was reported by several nurserymen to not only be subject to blight, but frequently in the nursery almost the the entire row would be blighted to the ground, and the tree was generally regarded by them as semi-hardy.

Strange to say, the Milwaukee apple, which has received favorable mention by the Minnesota Horticultural Society, was not referred to during the entire session, though Wisconsin is its home. When the horticultural doctors disagree, who shall decide what is best?

A complete revision of the constitution and by-laws was reported upon, and the revision accepted. The writer understands there is an annual appropriation by the Wisconsin legislature of $4,000 to be used by the Horticultural Society as its executive board may direct. The society seems progressive. Best of all, it is fearless in its exposing frauds, fakirs and unreliable agents and nurseries. The society is evidently prosperous, and raised the salary of its secretary to $1,500 per year. Mr. Cranefield is the right man in the right place, and he is worth $1,500 to the society if he is worth a cent. So any man who holds a position of responsibility and trust and does his work well is worth all that the society can afford to pay.

There were only two other states represented at this meeting by delegates. Out of these meetings grows a feeling of good fellowship, and the hearty exchange of courtesies is commendable.

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SECRETARY'S CORNER

SUCCESSFUL TREATMENT OF PLUMS.—"I started in March and trimmed out all old and worthless limbs, and scraped the trunks well up into the crotch of the trees of all rough, dead bark. Sprayed first March 28th with "sulphur, lime and salt wash" and again with bordeaux mixture, paris green and Lewis lye as soon as the plums were all set, as large as peas. I raised fifteen cases of plums from eight trees, three Miner, four Wolf and one unknown. No rot, pocket or fungus injured them. Plum gougers did about ten per cent injury."

—A. N. BATES, Excelsior.

WINNIPEG HORTICULTURAL SOCIETY.—It has been definitely arranged that Mr. R. A. Schutz, one of the lecturers on horticulture at the farmers' institute, and now well known in this connection throughout the state, will represent this society at the annual meeting of the Winnipeg society, to be held in Winnipeg Feb. 17th. and 18th. This is held in connection with a general association of all the societies in the vicinity, and a large attendance is expected. We note upon the program besides the name of Mr. Schutz those of three Manitobans who have attended the annual meetings of our society as representatives in late years, Wm. G. Scott of Winnipeg; A. P. Stevenson of Nelson and Dr. H. M. Speechly of Pilot Mound, Man., who was with us last winter.

DEATH OF GEO. W. FULLER.—Our attention has recently been called to the death of this old member of the society, who passed away at Lake City early in December at the advanced age of eighty-three. Mr. Fuller for many years was a prominent member of this society, operating a nursery where at that time were the frontiers of successful nursery culture, on the prairie at Litchfield, Minn. His last service to the society, as appears in our reports, was performed in 1893. From that time back, for some fifteen years, Mr. Fuller was active in his service with the organization and has left his impress upon the development of successful horticulture in the Northwest. He had been a resident of Lake City something like fifteen years prior to his decease, I believe.

THE SOCIETY NEEDS MORE REPORTS.—Last year there were three hundred more members on the roll of this society than we had reports to give them, and this year the situation seems likely to be the same or even worse. The only remedy in sight is an application to the state legislature to increase the printing appropriation probably by the issuance of 2000 more volumes. This will require an appropriation of $1000 to meet the expense. Application has already been made to the legislature for this appropriation, and the necessary bills will have been presented in both houses before this number of the magazine is received. Will not the members of the society please communicate with the members of the legislature from their respective districts asking their support of this measure? A little effort on the part of our membership in this direction will make the securing of this needed legislation much easier to be accomplished. Please give this important matter prompt attention.

PASSING OF A. D. LEACH.—This earnest and faithful long time member of the society passed from this life at his home in Excelsior at 2:00 p. m., Tuesday, Jan. 12th., at an advanced age not lacking very much of rounding out his eightieth year. Mr. Leach had been a personal friend of the writer for more than forty-three years, and during all this time he had entertained more than a passing interest in horticultural pursuits, being well located for such purposes

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on high land on the shore of the large and beautiful Lake Minnewashta. Conditions were favorable with him for experimental work in this direction, and with the growing of all kinds of fruits adapted to Minnesota on a not large scale he was eminently successful. An unusually careful man in all that he did, this practice extended to his work in the orchard and garden gave him assured results. Mr. Leach will be remembered for the interesting paper on growing peaches which he presented at a meeting two or three years since, the last contribution he made to the literary work of the society. His loss is deplored not only from what we shall miss as his contribution to the work of the society, but in a personal way by a large circle of friends and relatives.

More Apple Seed Needed.—A member of the society in the office a day or two since offered to send to the secretary a quantity of seed from some Northwestern Greening apples still in his cellar, which offer was eagerly accepted, as more seed is needed to send out to would be contestants in the apple seedling contest. Have not some of the readers of this still some Minnesota apples in the cellar, and if you are one of these will you not save the seed from them and send to the secretary, and any expense incurred we shall very willingly pay? It is an easy matter to secure this seed from the apple by cutting the apple in half, running the knife around and into the apple as far as the core but not through the core. The apple splits apart easily then, and the seed can be taken out without trouble. Don't cut down through the stem and the blow end but around the apple midway between these two points.

Members who desire this seed to plant for the prize contest can secure it of the secretary, and there is some on hand still for this purpose at ten cents per packet of twenty-five seeds.

Annual Meeting, Minnesota State Agricultural Society, 1909.—This meeting was held in Minneapolis the 12th, 13th, 14th of January. A splendid program had been prepared, which was listened to in the main by a fair sized audience, although the meeting of the first forenoon was not as well attended as it should have been. Much pains had been taken to secure representative men in the various departments of agricultural and horticultural work, and no feature of this work had been neglected. Horticulture and forestry were both well represented on the program and in attendance at the sessions where these subjects were presented. The writer was able to attend a number of these sessions and enjoyed them much. By a vote of the association it was decided to add a fourth day to the length of the meeting, making it, like the meeting of the horticultural society, a four days' meeting. A special effort ought to be made to get out a large attendance of farmers at these gatherings. A good attendance is assured of the delegates from the county fair associations throughout the state, three of whom are supposed to be in attendance representing each county fair. Aside from this there should be a large attendance of farmers who are not connected with the meeting officially. Such a program as is prepared should certainly receive more general recognition and benefit more farmers than it now does.

At the annual election, B. F. Nelson was re-elected president, John J. Furlong first vice-president, and a St. Paul man, J. H. Beck, second vice-president. J. M. Underwood was elected to succeed himself as a member of the executive board, assuring the continuance of his management in the various agricultural departments. Mr. Robert Crickmore, of Owatonna, was elected a member of the executive board to succeed Mr. Baird.

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RESIDENCE OF CHAS. HARALSON, SUPT.,—AND GREENHOUSE—AT MINNESOTA STATE FRUIT-BREEDING FARM. AT ZUMBRO HEIGHTS, MINN.

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THE MINNESOTA HORTICULTURIST

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Minnesota State Fruit-Breeding Farm.

CHAS. HARALSON, EXCELSIOR, SUPT.

The work of the State Fruit-Breeding Farm has made good progress during the last year, and much work has been done to lay the foundation for experiments in plant-breeding. The grounds on which the buildings are located have been put in fairly good condition by grading, and leveling, and seeding down to grass, but there remains, however, much work yet to be done in an ornamental way.

A great deal of preliminary work had to be completed before we could do our best plant-breeding work. This work consisted of putting up buildings, of draining low places on the farm, and of working up plant stock for our crossing work.

Buildings.—We have built a cottage of seven rooms, with packing shed and greenhouse, 18x50, in connection; a heating plant has been placed in the greenhouse; a water tank has been put up on a tower in the barn and water mains connected to the barn, the greenhouse and the two dwelling houses. We have put in a new 6-inch tubular well, 250 feet deep, which will give us a good supply of water. We have built a storage cellar, 25x50 feet, of concrete, for storing tender varieties of trees and seedlings during winter. We have also erected a barn, 30x40 feet, with an addition, 16x30 feet, for wagon and tool shed.

Drainage.—There were several low, wet places on the farm which were too wet for trees; so we put in a drainage system, laying a total of 8,800 feet of drain tiles. This will practically drain the whole farm.

Seedlings were moved from the Experiment Station, St. Anthony Park, to the state fruit farm and planted out last spring (1908). These included 600 Beta grape seedlings, 3,700 apple seedlings from Malinda seed, 1,200 raspberry seedlings (all hybrids), 1,650 strawberry seedlings (all hybrids), 10,500 plum seedlings (all from selected seed), 4,000 seedlings of plum, sand cherry and other varieties for stock to bud on, and 285 apple trees for the orchard. Mr. Wyman Elliot donated to the fruit farm 3,700 choice apple seedlings that he had been collecting for several years and did not have room to plant out.

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Fruit Trees and Plants. We have bought and planted about 600 fruit trees, grape vines and berry bushes from different nurseries in the United States and Europe. Some of these have been imported from England for plant-breeding purposes. These latter are mostly tender varieties, and consequently will not stand our winters but will be valuable for crossing work. About 300 of these trees are grown in pots and stored away in the celler, to be taken into the greenhouse towards spring for crossing with our native fruits. One thousand Paradise apple stock and 100 quince stock have been imported, planted out and budded to choice varieties of apples and pears. The object of using this stock is to dwarf the trees so that they can be grown in pots for greenhouse orchard culture. About 3,200 buds of peaches, nectarines, apricots, and European, Japanese and California plums have been budded on plum and sand cherry stocks, to be used later for plant breeding purposes.

Seedlings grown. During the past year we have grown the following plants from seed sown in the spring of 1908; 11,390 Beta grape, 4,660 sand cherry, 275 hybrid plums, 134 Rosa rugosa, 11,000 apples, 3,955 plums, and 700 other seedlings, mostly crosses, and several hundred strawberry and raspberry seedlings. This represents a total of 32,300 seedlings, all of which are to be planted for fruiting.

We have also grown 36,750 Gould crab seedlings for use as a hardy stock for grafting purposes. The total number of seedlings grown here this summer will amount to about 70,000.

Plant breeding work has been carried on to some extent, but the cold rainy weather last spring prevented the fruit from setting readily. Some crossing work was done at the home of the late Nils Anderson, at Lake City, Minn., with Burbank, Shipper's Pride and Damson plums and our native plums, with fairly good results. Crossing work was also done with Beta and leading varieties of grapes at Mr. Gust Johnson's place, at Excelsior, with good results. Several trips have been made in search of wild raspberries and blackberries of special value, and we found several which are very promising.

The work outlined for next spring and summer will be principally with strawberries and raspberries. We have now in pots in the greenhouse 325 strawberry plants of the best varieties we have been able to obtain. With these and the raspberries, the crossing work will be done under glass. Some potted fruit trees will also be taken into the greenhouse for crossing work. These consist mostly of cherries, and will be used for crosses with our native plums and cherries.

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On account of the newness of the place, we cannot point to any great results in plant-breeding, although we have a number of interesting seedlings. There are great possibilities for this fruit farm in helping Minnesota horticulture. The seedlings now on hand, in my estimation, will give interesting and valuable results in the near future.

In conclusion, I desire to express my appreciation to members of this society and others for their assistance in sending scions and plants of new things, which are of value in carrying on the work of plant-breeding successfully. We want the earnest co-operation in our work of every friend of fruit-breeding.

Residence of assistant, and orchard, at State Fruit-Breeding Farm.

Mr. Wyman Elliot: For fear that some of you may not know the exact location of this farm, I will state that it is on the Minneapolis & St. Louis Ry., close to Zumbra Heights Station, five miles west of Excelsior, on high rolling ground, and I think it is an ideal location for this experimental work. When you take a grain farm and come to transform it into a Fruit-Breeding Station, you may know that it means work, and that is what Mr. Haralson has been doing the past year. We started that farm a year ago last October. From my visits to this farm and with the knowledge of the work that he has done during this past summer, it leads me to believe that we shall receive results that will be very far reaching, and I hope that every member of this society, if he can possibly do so, will visit that farm and see for himself the work that is being done there. I have been interested in this work of growing seedlings for a number of years, and for that reason I turned over my seedlings to the farm, where they can be

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better taken care of. If any of you have any seedlings that seem promising, the better way will be to send them to that farm. Your interests will be fully protected, nothing will be distributed except under your direction. I hope you will look upon this as one of the best movements we have ever started in Minnesota in the line of plant-breeding. (Applause.)

Pres. Underwood: Last fall Prof. Green invited several of us to visit this farm, and we found it an exceedingly interesting place. We all enjoyed the day very much, and Mr. Wedge will now give us a report of that visit. If we had never done anything more as an auxiliary society than to inaugurate this movement, I think it would reflect sufficient credit on the society.

Mr. Wedge: I will say that this report is a necessary part of this meeting. By an act of the legislature establishing the station, a report is required to be made to the executive board of the horticultural society every year. This is a matter of routine, and my report is in a way a repetition of Mr. Haralson's report.

Report on Minnesota State Fruit-Breeding Farm.

CLARENCE WEDGE, ALBERT LEA, INSPECTOR.

On the 12th day of last October, in company with Mr. J. M. Underwood, President Green and Secretary Latham, the writer had the pleasure of going over the grounds of the fruit-breeding farm lately established by act of legislature and under immediate superintendence of Mr. Chas. Haralson.

This being my first visit to the place, I was interested in noticing its convenient location, the favorable soil and exposure, and the progress made in buildings and general improvement. We found Mr. Haralson immediately engaged in completing a job of tiling that will rid low spots of surplus water and make the condition of the soil throughout perfectly suited for the work which has been undertaken. We were pleased with the substantial appearance of the buildings and their convenient arrangement. In addition to the dwelling house which was bought with the place, and which is used as a residence and boarding place for the workmen, a convenient building has been erected to accommodate the superintendent, a greenhouse for convenience in cross-pollination with tender varieties, a commodious cellar for wintering stock (built and arched over with concrete in the most substantial and durable form) and a barn for housing the horses and vehicles—a considerable proportion of the materials for which last

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named structure were purchased with the place. The improvements of this sort showed the good management that we had reason to expect from the officer in charge.

The most interesting and gratifying work accomplished has been, however, in the plantings made to carry out the legitimate work of the farm. We did not make a very careful estimate, but we should judge that already not less than one-quarter of the ground has been planted to fruits of various kinds, the rest of the land having been put into farm crops that could be used to advantage on the place as forage and feed for the live stock. The seedlings already planted are in about the following proportion: 9,000 apple, 5,000 grapes, 12,000 plum, 3,500 strawberries, 1,200 raspberries.

The first field that we visited was the raspberry plantation. As it was the first raspberry field that we had ever gone over devoted entirely to seedlings, it was an intensely interesting sight to the writer, showing as they did even greater variation than is usually found in tree fruit seedlings, and representing all variations, from the large, strong growing Columbian type through all grades of blackcaps and tip-rooting kinds to the suckering varieties. Every color of cane, style of leaf and habit of growth seemed to be represented. Such a great variation of type would certainly give promise of something new and interesting. About the same could be said of the strawberries, which were grown in the usual way, except that the matted rows were divided by bare strips into blocks, each block being occupied by a seedling plant with its crop of more or less abundant runners. This block was scarcely less interesting than the raspberries, showing as they did every conceivable variation in leaf and habit of growth and types of the common cultivated sorts, native Alaskan—and even the runnerless, everbearing kinds were represented. From the latter we had the unusual pleasure of picking strawberry blossoms in October.

The plum block was filled with equally promising material gathered from many sections and representing the largest planting on the place. The work in apples is of course of largest account. The seedlings generally had an unusually healthy appearance considering the character of the season and seemed to deserve general commendation. We were particularly interested in the block of 5,000 seedling grapes, nearly all of which we believe represented crosses having in them the blood of the Beta. The work with the grape having been undertaken on so large a scale with such promising material, it can scarcely be doubted that in a short time we may have the early, hardy variety of good quality that is so much needed. If the entire result of this work

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should be no more than the production of a new Concord, hardy enough and early enough for our section, it would be worth many times the cost of maintaining this station for twenty-five years.

We had almost forgotten to mention the interesting material gotten together in pots for blooming in the greenhouse this winter. Plums, cherries, peaches, apples, apricots, all in apparently healthy condition, and the larger share of them with fruit buds fully developed, were ready for the cellar, where they were to be kept dormant until such time as they might be brought into the greenhouse to bloom and serve for making such crosses as would be almost impossible to obtain in ordinary outdoor conditions.

We found the place in the best of order and general workmanlike condition, and we believe it is to become so intensely interesting as to be the most popular resort in the state for horticulturists to visit. We noticed a convenient and comfortable looking body of timber left as a shelter for the fruit plantation, and we venture a suggestion that at some day the summer meeting of our horticultural society may have its most popular gathering at this place.

Mr. C. G. Patten (Iowa): I have a thought in connection with this paper which is one that might interest many of the members. It is with reference to the use of stocks for dwarfing the apple. The suggestion was brought out in Mr. Haralson's paper, and it is a good one. My mind goes back to the reference of Prof. Hansen to the use of the Pyrus baccata for stock, and undoubtedly there is a very valuable work being done in that way. The Pyrus baccata used as stock for the apple, when grafted close to the ground, dwarfs the apple. I have a Wealthy tree that is so grafted and is now about twenty-five years old, which is not more than one-half the size of the Wealthy grafted upon common apple stock, and that tree is one of the most healthy that is upon my grounds, of that age. There comes another thought with this that is valuable to horticulturists, from the fact that spraying must be done, and the time will come, and is now come, when the attention of horticulturists in the east is being called to the possibility of dwarfing trees in some manner so that the expense of carrying on the work of spraying may not be so great, and I for one believe that great value will come out of the use of this stock in that direction.

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VICE-PRESIDENT'S ANNUAL REPORTS, 1908.

Vice-President's Report, First Congressional District.

S. H. DRUM, WASECA.

It seems from the reports received that old orchards and those that bore no fruit last year were heavily loaded with apples this season in some localities. Fillmore county, Mr. Snyder says, shipped several carloads of apples this year; the rest of the district report a very light crop. In portions of Waseca and Freeborn counties hail destroyed the trees as well as the fruit.

Nearly all report plums a complete failure; one or two in the eastern part of the district report a crop. Very few cherries are grown in the westen half of the district, but Mr. Yahnke, of Winona, says the Homer did well with him. Mr. Cowles, of West Concord, says he had a good crop of grapes which the hot weather in September ripened nicely.

Fruit exhibited at the Waseca County Fair, in 1908, in First Cong. Dist.

Blackberries were very good in some localities but dried up badly in others. Raspberries range all the way from good to none at all and so do strawberries. Leaf rust was destructive in some places.

An unusual amount of nursery stock was planted, and it is all doing nicely; but I think there has been less than usual planted in Waseca county, particularly in the hail district, where a number of large young orchards were destroyed.

Very little blight is reported. Only commercial orchards were well sprayed; others were neglected. Mr. Sahler, of Waseca, had no results from spraying this season, excessive rains at the time it was

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done destroying its effect. Others will try it next season with the hope of better results.

Fruit trees all wintered well last season and held their leaves rather late. Some evergreens were winter-killed: arbor vitae suffered most. I noticed some spruce planted on high land dead or dying.

Fruits seem to be going into winter in fine shape, but in a few instances the hot weather in October forced the buds. The following seem to be the favorites: Wealthy, Patten's Greening, Hibernal, Peerless, Whitney, Anisim, Duchess, Charlamoff and Peter. Several mention Wyant plum as especially good. The hilly eastern counties would like more moisture in the soil, but the flat prairie lands have more than they need.

Flowers recommended are phlox, larkspur, peonies, iris, and gailardia, spirea Van Houtii, snowball, hydrangea, mock orange, new French lilac, hoptree, barberry. Thunbergia and hybrid rugosa are most mentioned as ornamental shrubs.

We had an ice storm on the 6th of March, and the ice clung to the trees for several days. I saw no ill effects, but one or two of my correspondents attribute loss of fruit to it. We also had two hard frosts about the 1st of May, and the foliage on those trees whose leaves had appeared was scorched somewhat, and fruit buds were injured where the trees were in exposed positions, but those in protected orchards were uninjured.

From my notes of May 28th I find stated: "Plums will be a failure this season; the buds were so forward that the frost of May 2nd killed them. Raspberries were badly killed back where not covered. Strawberries the same. Currants were loaded with bloom last spring and were a crop."

In my notes of May I find: "Insect pests numerous, but the constant rain makes it impossible to spray to any advantage. It is getting pretty late to do so now but will try when good weather comes."

If we don't do something to lessen this bug evil we will soon be in the predicament of the bee man who said, "The moths, millers and other combustibles have teetotally destroyed my bees"—only ours will be trees.

I planted seed of Peter and Patten's Greening apples and have a number of seedlings growing. I also attempted cross-fertilization, but the heavy wind and rain all through the month of May combined with my inexperience frustrated my attempts.

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I noticed a green louse on both apple and plum trees. They differed slightly but were both very lively.

I set some Talman Sweet grafts on Hibernal for my neighbor, Mrs. Bishman. On examination this fall I find five out of six growing nicely.

Our fruit exhibit at the Waseca county fair was a success. The fruit was judged by Prof. LeRoy Cady in a very satisfactory manner.

Clear Lake at Waseca, in First Cong. Dist.

Mr. S. H. Drum: I was very much surprised when I was elected vice president because I am so new in this sort of business, but as long as I am in I am determined to do my best in the work because I am in hearty sympathy with it. I have taken such notes as I thought would interest our people and our society and would advance the cause of horticulture in our section of country. We have no large commercial orchards at present, but they are setting out orchards of from five hundred to a thousand trees, and some of our orchards are in bearing, but a portion of them, and some of the nicest ones, were almost completely destroyed by hail last June, so that I could not report very much on that part of it.

I have here a note made last spring in regard to the keeping of apples. On March 12 I have this record: "Peter, Wealthy and some Hibernal apples still keeping, but they are beginning to rot badly." April 15th: "Still have some Peter." On March 17th I planted seed of the Peter apple crossed with a Duchess, grown on a Peter next to a Duchess tree. This apple had all the appearance of a Duchess

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apple, was large and very finely shaped and colored like the Duchess. It was like the Duchess in appearance and shape, but it was grown on this Peter tree, and it was one of three or four apples on the same tree. I saved the seeds and planted them and have some of the seedlings growing from them.

I met a Mr. Andrew Holtgren, and he told me he had had success with grafting standard apples on wild crab, and the tree was growing, as was reported by Mr. Schutz. I took pains to visit Mr. Holtgren's yard where these trees are growing. They are now about five inches through, I should judge, and you can tell by the bark where the wild crab comes in, but otherwise they are perfectly smooth, and they are quite large trees. I could not tell the variety because Mr. Holtgren was not at home, and no one could tell me what they were, but I noticed particularly one or two of those trees—and there are perhaps half a dozen—that had the appearance of Tetofsky. They were bearing when I saw them.

There is one thing I noticed that might be of interest to our Forestry friends. My near neighbor had a cottonwood grove of about one acre. It was planted quite far apart, and maple trees were planted between the others. I know this grove very well; it is thirty rods from my place. It has been over forty years in growing, but they cut from that grove last spring, 27,000 ft. of lumber. It is just about an acre, but the cut of lumber amounted to 27,000 ft.

Prof. Shaw: How much was that worth there a thousand?

Mr. Drum: $15.00 a thousand there.

The President: It is worth something like $21.00 to $22.00 sawed in the plank.

Mr. Drum: There was another thing that I noticed there,—not much this year—but trees transplanted in stiff clay soils in the nursery did not do so well on black prairie soil in the western part of our county, and our land is of that character—and even where the land is high enough to be well drained those trees did not do well. They have sometimes rotted at the root, with too much water, and while they are doing quite well in the eastern part of my district they would like a little more moisture. Those were the reports I got from the eastern part of my district, that they wanted a little moisture, but in other parts we have too much moisture in many places. We have had seven years rain, and our prairie country is congested with moisture. We were all rejoicing in the drouth this summer, except on the hills, where we have clay soils.

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Vice-President's Report, Second Congressional District.

JOHN BISBEE, MADELIA.

I sent out twenty-five of the blanks received from the society and received fourteen answers.

The reports from the apple crop show it to have been very poor; only a few orchards, those that did not bear a crop in 1907, had a good crop this season. The prospect for a crop next year is very good.

The crops of cherries, grapes and all small fruits are reported below medium to poor, with a good prospect for 1908.

Snowball on premises of Wm. Pfaender, Jr., New Ulm, in Second Cong. Dist.

The strawberry crop was injured severely by heavy rains during the fruiting season.

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There has been much nursery stock planted in some localities, and fairly good efforts made in most localities in that direction and with good results.

Murray county reports many orchards started and a prospect that the county would be noted for its apples in the future.

Blue Earth county reports never as many apple trees planted before, and they have made a good stand.

Very little blight reported.

There has been very little attention paid to spraying. One locality reports it as becoming a necessity. Blue Earth county reports a few have purchased power sprayers this fall.

I have to report in many cases that spraying has become a necessity. I had little fruit in my orchard, and much of that was injured seriously by scab. I find University, N. W. Greening, McIntosh Red, Malinda, Patten, McMahon White, Newell affected the worst and many others more or less. The foliage of all was affected somewhat.

The trees did not hold their leaves late this fall.

Fruit trees were not injured last winter. They are in good condition this fall. We have plenty of moisture. List of apples should include Wealthy, Patten's, Duchess, Hibernal, Malinda, McMahon White, Florence, and Whitney crab, Anisim, Charlemoff and Peter.

Plums: DeSoto, Forest Garden, Surprise, Rockford, in some localities; Compass, Wolf.

Grapes: Concord, Agawam, Beta, Janesville and Moore's Early.

Raspberries: Loudon and King.

Ornamental Shrubs: Hydrangea, snow ball, spirea Van Houtii.

Hardy Flowers: Golden glow, daisy, phlox, lily of the valley.

One correspondent says all tender varieties of lilac will prove entirely hardy if grafted on white ash roots, and will not sprout or sicken.

With the apple, which is now every year becoming more and more popular in the southern half of the state, I feel that we have reached the point where the future is assured. The influence of this society in bringing about this result cannot be well overestimated, and with the continued efforts of our two thousand strong I think we will soon conquer the northern half of the state and look across the line to the north for other worlds to conquer. The raising of hardy seedlings and top-working apples of good quality onto hardy roots are to be strong factors in the attainment of our object.

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Vice-President's Report, Third Congressional District.

C. H. ANDREWS, FARIBAULT.

The Third Congressional District lies just south of central Minnesota, extending fifty miles south of St. Paul and westward from Red Wing 100 miles.

The apple crop in general through this section was very light, this being an "off year." A few varieties, particularly Duchess, Patten's Greening, Wealthy and Whitney, did fairly well in some localities considering the unfavorable conditions. We have a good prospect for a crop in 1909 where the trees were not injured by hail. Duchess, Hibernal, Wealthy, Patten's Greening, Anisim, Whitney, Virginia and Minnesota seem to be the kinds that are doing best in this district. University and Iowa Beauty are promising newer varieties. The Northwestern Greening is apt to grow too late in the fall and is so subject to winter injury that it is not reliable here.

Winter at home of C. H. Andrews, Faribault.

Plums were a poor crop, due to the cold, wet weather at blossoming time. The freestone Wolf bore well in widely separated localities, where other varieties adjacent had little or no fruit. The Wyant, De Soto and Surprise are reported as being good varieties. Those who keep a few swarms of bees usually have a fair crop of fruit even when there is quite a general failure otherwise.

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Cherries of the Morello type, such as Early Richmond, Ostheim, etc., are not usually a success. The Compass cherry-plum is more reliable for bearing. It fruited well. Prof. Hansen's improved sand cherries, Sioux and Tomahawk, also the hybrid cherry, Tokeya, bore well the second season after setting out. The Sioux is of excellent quality—about like Early Richmond. These varieties seem to be perfectly hardy, and the most dependable and best quality of everything yet introduced in the way of a cherry for the North.

The 1908 small fruit crop was not up to the usual mark. Currants and gooseberries ran from a light to a fair crop.

Grapes ranged from a total failure or light crop to fair. The season was too cool and wet in the early part, and too dry in August and September; the earlier ripening varieties did best. Grapes are grown only in a very limited way.

Blackberries winter-killed somewhat, and drought cut the crop short at the time of ripening, though in some localities there was a fair crop.

Raspberries also winter-killed in most places; hence crop was very light, and the fruit inclined to be small.

Strawberries varied considerably, as parts of the district were hailed out, and others were almost drowned out, at the time the berries were nearly ripe; while in more favored places the yield was fair to very good. In general, the very wet weather early in the season was detrimental to the strawberry crop.

Blight has been unusually light the past season. Nothing seems to have been done to prevent it. The dry weather from the middle of July through August probably had a deterring effect on the development and spread of this fungus.

Only a little spraying has been done as yet. In some localities some growers have practiced it with results ranging from indifferent to good. To be effective the spraying must be done at the proper time and thoroughly. Indications are that more will be done along this line within the next few years. Fruit trees of all kinds came through the winter of 1907-8 in good condition. This past fall the wood ripened early and thoroughly. The ground was somewhat dry, but late rains just before freezing up put the soil into fair shape for wintering the trees.

In most parts of the Third District the usual quantity of nursery stock was planted in the spring of 1908, and in some parts considerably more than in most seasons. In nearly all instances where given proper care the newly planted stock has done well.

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Less interest has been taken in ornamentals than in fruits. Much of this seeming indifference is due to the common though mistaken impression that it requires a great deal of work and coddling to make much of a showing with shrubs and perennials. Lilacs, honeysuckles, spireas, peonies, etc., are what have been most commonly planted heretofore, but other things ought to be taken hold of and the planting laid out on a larger scale and more in accordance with proper landscape principles, as set forth in the papers that have been read before this society on the subject.

Vice-President's Report, Fifth Congressional District.

THOS. REDPATH, WAYZATA.

The 1908 fruit crop in this district was rather poor. Strawberries were about half a crop; it was unusually wet during May and June, and there was considerable injury to the roots during the winter. The snowfall was light, and the ground was bare the most of the winter.

Type of Wealthy apple tree in F. J. Butterfield's very profitable orchard, at Long Lake, Minn., in Fifth Cong. Dist.

Raspberries were from one-third to one-half a crop. No rain with the exception of one shower all through the picking season.

Blackberries were nearly a failure on account of drought; some exceptions where the ground was low and near marshes.

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Currants and gooseberries were about an average crop.

The apple crop was very light, about a quarter of a crop, and some orchards were a complete failure; the only exception to this was the orchard of Mr. Butterfield, located two miles west of Long Lake. This orchard bore a full crop. Most of the trees are Duchess and Wealthy. There were 1,200 bushels of Duchess sold and about 800 bushels of Wealthy. This orchard is not cultivated, but is mulched under the trees. It was sprayed two times. Mr. Butterfield has 100 colonies of bees.

No plums to speak of this year—too wet and cold when the trees were in bloom.

Excelsior reports the grape crop as good—this is where most of the grapes are grown.

The small fruit prospect for another season is not very encouraging. Strawberries have not made many runners. Raspberries are some better but have not made their usual growth. Prospect good for apples. Trees are full of fruit buds and have gone into winter quarters in fine condition with plenty of moisture. There has been considerable nursery stock planted, with good results. The varieties are mostly Duchess, Wealthy and Patten's Greenings. Strawberries: Dunlap, Bederwood, Splendid, Warfield. Raspberries: King, Miller and Ironclad. All of the best growers are spraying. No blight to speak of the past season.

Vice-President's Report, Sixth Congressional District.

A. WILWERDING, FREEPORT.

In presenting my report to the horticultural society I beg to state that to the twenty-five letters sent out I received thirteen answers from members, distributed over ten counties. The information they contained, being summarized here, gives results as follows:

Apples: Trees in very good condition, with well ripened wood and an abundance of fruit buds, the crop having been fifty per cent of an ordinarily good one.

Plums: Trees in fine condition, set back a little by aphis. Crop sixty per cent, owing to much rain when in blossom. Afterwards aphis appeared, and the dry summer months caused them to be of small size.

Cherries: Birds prey on these. One pound saved for seed by protecting branches with cheesecloth is reported. Crop light. Compass cherry sustains its reputation all over the district, being eighty-four per cent of a good crop.

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Grapes: Vines in fair condition. Crop eighty-four per cent; latest varieties like the early. Concords were damaged by frost. Salzer's Wild Improved is reported doing best at the Reformatory, near St. Cloud. Stevens county fair had in all two plates of Concord and a very nice show of highly colored earlier varieties, as Beta, Campbell's Early, Moore's Early and Diamond. Brighton was pronounced the sweetest ever tasted by visitors from other states. Raising this fruit, donated to us out of Paradise, is very much neglected all over a wide area in this district.

Blackberries: Only two answers, stating about ninety-nine per cent of a crop.

Raspberries: Crop damaged by late frost amounts only to forty-five per cent. Covering bushes very little practiced here.

Exhibit of A. Wilwerding at Stearns county fair, 1908, in Sixth Cong. Dist.

Currants: In good condition where sprayed. Worms ruined in recent years sixty per cent of the plantations, and crop comes to about sixty-five.

Gooseberries: Some failures and crop very light. Wild ones in the forest had good protection against rain, so quite a lot of these were gathered. It seems the new "Carrie," even planted late in November, succeeds well in bringing a first crop.

Strawberries: Crop all around is seventy-nine per cent, and plants seem to be in an excellent condition. The so-called sod culture for second crop don't work up good results.

Other Fruits: Some fine specimens of Russian mulberry seedlings are raised here in the district and would be worth propagating. A few prunes went also to county fair at Sauk Center. Pears raised on dwarf stock can be reported as only having been in blossom, as it seems that rain destroyed the pollen so they did not set.

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Planting stock is reported as usual with good results, but agent's advice to plant Ben Davis apple as far north as Wadena county is a harm to horticultural interests. Also the packers putting the wrong labels on their trees is another practice very much used, and so a good many hardy varieties drop out of good reputation. The writer's first Okabena tree brought him two fine Transcendent crabs on one side; the other side did not fruit yet.

Blight: None to speak of reported. Cutting off branches and spraying with bordeaux mixture was used on a small scale against blight. My own observations vary a little. When at blossoming times or later the new growth of plums or cherries begins to wither I use my knife at once, cutting the outer bark on stem and even on larger branches, thus opening the bark to pass the surplus sap farther up into the branches while it has no more space between bark and wood to ascend in the smaller tips. This brings in a short time such a wonderful change, and as a result many times a good crop is saved. Damaged trees by early freezing when in leaf already were saved by cutting up bark at once.

The raspberry at Bay Lake on place of Otto Wasserzieher, in Sixth Cong. Dist.

Spraying becomes a necessity, but in country plantations where vegetables are grown nearly impracticable. Very few trials are reported with fair results, although a spray with bordeaux mixture on plums against pockets had such a success that apparently well sprayed trees

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did not have a single pocket, while where a weaker solution was used some pockets made their appearance on the same variety of fruit. Well ripened trees came through last winter all right, even with less snow, where the soil had a goodly amount of moisture; nevertheless shrubs suffered, as well as evergreens, and even some Russian tying and basket willows were dried out to the ground.,

For the coming winter fruit trees are well prepared, the wood ripening a trifle late, but the season has been very favorable on account of late rains providing enough moisture in the soil.

There is such a difference in soil and other conditions that it will be very difficult to give a list of fruits for the entire district. Duchess, Hibernal, Patten's Greening and Charlamoff may be the most widespread for first degree of hardiness, while Wealthy, Anisim, Tetofsky, Gideon and Yellow Transparent and others will do well in some soils and in better protected locations. University and other of Patten's seedlings, as Duchess No. 6, Eastman, Patten's No. 105 and also dozens of others, could be recommended for trial.

Crabs: Whitney No. 20 is the king, Florence the queen, Early Strawberry. Great crops of Orange are found spread here and there on some of the oldest trees. Virginia is worth grafting, old big stumps being overgrowing quickly, but nevertheless not so productive as expected; also some unknown varieties flourish well around here.

Plums on society folder list, as DeSoto, Surprise, Wolf freestone, Wyant, Wood, Cheney (if we have the genuine) do very well, while I notice that Surprise had the least plums and Wolf freestone had the most of all.

Cherries, as Early Richmond, Ostheim, Vladimir, could be raised in dryer situations, while Compass cherry beats all. For list of small fruits consult the society folder list.

One of the best cared for cemeteries is the St. Joseph cemetery, near St. Cloud, and there is a list of all possible annual flowers grown, while a grass sprout has no chance to develop.

Rev. Father John B. Katzner's list for shrubs takes hold yet so it couldn't be much improved, I guess. There seems to be a lot of seedlings raised all over the district. Even pear and prune seedlings are grown in trials, while some good winter apples are reported near Paynesville.

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Vice-President's Report, Seventh Congressional District.

C. C. SELVIG, WILLMAR.

The winter of 1907 and 1908 throughout this district was generally hard on the fruit trees on account of continually thawing and freezing and too little snow. The spring of 1908 opened promising but turned into a cold, wet, dragging spring, it being well into June before the ground got well warmed up. However, notwithstanding the climatic conditions, fruit trees, as well as other trees, came through in fairly good shape, no large losses being reported. There is no question but that we are now beginning to reap the benefit of our northern grown stock, and as time goes on we shall find that the failure of our fruit trees to stand the winters of Minnesota will grow less and less.

The apple crop was fair; plums and cherries, poor; grapes, blackberries, raspberries, fair; strawberries, good.

There has been no blight reported except a little in Pope county.

No spraying was done, on account of the season being too wet at the time this work should be done.

Fruits, trees and shrubs did not suffer from cold; trees held their leaves well into late fall.

Fruit show at the Willmar street fair, 1908.

Fruit trees are going into winter in good condition, but generally speaking there is little water in the soil.

The following varieties of fruits seem to be in favor in this district:

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Apples: Wealthy, University, Patten's Greening, Duchess and Hibernal.

Crabs: Whitney, Lyman, Sweet Russet, Virginia and Minnesota.

Plums: Surprise, Wolf, Wyant, Stoddard and DeSoto.

Strawberries: Senator Dunlap, Parson's Beauty, Warfield and Splendid.

Raspberries: Loudon and Cuthbert.

Cherries: No cherries grown but the Compass, which is really a plum and is well spoken of.

Blackberries: Ancient Briton and Snyder.

Grapes: Delaware, Concord and Brighton.

There seems to be a general awakening as to the advantage of growing good hardy perennials and ornamental shrubs, and the following are those finding the most favor throughout the district: hardy phlox, snowball, peonies, gaillardia, hydrangea, syringa, spirea, variegated dogwood, lilac, columbine.

In general both tree and bush fruits seem to be doing well, especially where care is given them and the right varieties planted, and the future prospects are bright. Throughout the district are men who are giving their best endeavors to make fruit growing a success, and while there has been but little spraying in the past, there will be more in the future, as the farmers are gradually awakening to the benefit they will derive from a systematic method of handling their orchards as against the old happy-go-lucky style.

In my own county, Kandiyohi, apples were an average crop, quality being good. Wealthy were rather small in size. Wealthy and Whitney trees bore a heavy crop. It has generally been understood here that the Transcendent crab is short lived, but we have a few trees of that variety that bore a heavy crop this year that are all of thirty years old.

Plums were a poor crop and all the early varieties went into plum pockets. The later varieties were the only ones that bore any plums to speak of, and they were of poor quality.

The Compass cherry did well this year, no rot appearing.

Strawberries were a fair crop and of good quality, and plants are in fine condition for next year.

Gooseberries and currants were a fair crop.

The Beta grapes seem to do as well both in growth of vines and in fruit.

The Kandiyohi County Horticultural Society, together with the Willmar Street Fair Association, had a fruit exhibit at Willmar the latter part of September, 1908, consisting of 134 plates of apples, seventy-five plates of crab apples, seventeen plates of plums and eight plates of grapes and seventy-three entries of canned fruits and jellies. About $225 was distributed in premiums on fruit and vegetables.

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Vice-President's Report, Eighth Congressional District.

S. P. CROSBY, BRAHAM.

The Eighth Congressional District consists of Aitkin, Anoka, Carlton, Cook, Isanti, Itasca, Kanabec, Lake Mille Lac, Pine and St. Louis counties, occupying the northeastern part of our state territorially, and is by far the largest district in the state. From the northern boundary —which is the state line—to its southern boundary is about four degrees, the whole length of the state extending only about five and one-half degrees. Geographical position or location within this state has some significance when temperature is considered as applied to horticulture, especially when early spring products are concerned and desirable.

While horticulture means "garden culture," I want briefly to mention an important factor which is akin to horticulture as well as agriculture, and that is state ditching, meaning the large amount of ditching that has been done the last few years pursuant to legislative acts; and the immense benefit to the land and to the landowners' pocket cannot be told in a short time, so I will not attempt it.

Fruit display at Kanabec County Fair, in Eighth Cong. Dist.

Much valuable ditching has been done in this (eighth) district, especially in Isanti and Kanabec counties, from my personal observation—county ditches, so-called, when confined to county limits; judicial ditches, when extending into two or more counties. The laws providing for these ditches, the manner of their construction and their courses, as well as for the payment of them, are based upon the most common sense principles. The engineer laying out the ditch has the right to use his judgment as to the location, and has the right to vary from the line specified in the petition for the ditch by the abutting property own-

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ers, following an old water course or ravine if thought best to make the most effective drainage. The cost of these ditches is not high when compared with the benefits received, and the manner of payment is easy—ten per cent each year for ten years.

The practical value of these ditches has been well demonstrated, in some cases the first year, when dug in the spring, the ground in the fall being suitable for plowing. Thousands, and I may say tens of thousands, of acres of wet and swampy land, of no use except in remarkably dry seasons, are now reclaimed and proving to be some of the best and richest land tilled by the farmers in this district.

S. P. Crosby and daughter, Braham, Minn.

We have what is called a sandy soil, but, allow me to add, a good soil, and as productive as any soil in the state for general crops—unless we except certain parts of the southern portion of the state. In many places, side by side of the sandy knolls is meadow land of a dark brownish peat, or muck, the latter containing nearly six per cent of free nitrogen. From experience I know it to be a valuable fertilizer when added to the more sandy soil and used together with ten per cent of air-slaked lime. Such a fertilizer used on corn and potatoes proves as beneficial as the best barnyard manure. This is only

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another illustration of the old truth that there are many good things within our reach and that we do not always know it.

In submitting this report I want to say that I was fortunate in getting answers to the questions sent out,—receiving about fifty per cent of replies. This, I think, was because of a little note appended to each circular stating that "I would consider it a personal favor if the questions were answered and returned to me—subscribing my name." This worked well and brought answers.

Reporting upon the different items from a concensus of opinions and from what personal observations I could make, I find that the fruit products vary considerably in different localities. This would naturally be, owing to diversity of soil and climatic conditions. In my candid opinion, however, more depends upon special attention than from any other cause. For instance, in Royalton the apple crop was "fair," while in Hinckley, not more than fifteen miles away, it was almost a complete failure.

While special localities for an orchard are to be considered, such short distances are not sufficient to account for such difference in results. The plums were also a fair crop in some localities and few or none in other places. Cherries and grapes did not make much of a showing. There was a fair crop of blackberries, and fair crops of raspberries and strawberries.

Small fruit generally does well here. Currants and gooseberries and much other garden truck will grow in a night, so to speak, and the same can be said of flowers.

The fruit trees and shrubs with few exceptions came through last winter all right; grape vines suffered some from so-called winter-killing. There is not much spraying of trees about here, not as much as should be. While there has been considerable nursery stock planted, there is room for much more.

In conclusion I will say that the Eighth Congressional District is well adapted to fruit raising. It has many varieties of soil, a large amount of natural forest protection and usually plenty of rain. What we want is better horticulture and more of it. When a man buys a few apple trees and sets them out and gives them the right attention (that is, the attention they should have and which is well understood), he usually gets good results; and he is the very man to buy more trees. He takes the right kind of interest in his work and is successful.

Then there is the other man who buys the same kind of trees, sticks them in the ground and says "grow," doing nothing more for their welfare, leaving them to take care of themselves; this man will

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get few if any apples—and perhaps nature has especially favored him, too. This man says fruit raising is a failure, but the thorough and painstaking man knows better.

No one can raise apples successfully unless they are given the proper care and attention. We all know that in fruit culture those succeed who are filled with enthusiasm about it. I remember two years ago this winter I had the pleasure of meeting Luther Burbank, of California, and in conversation he made the remark, "In Minnesota you are going to do as much as we are doing in California, although it will take time to work out the results." That is the opinion of that great wizard who has almost performed miracles in horticulture.

Vice-President's Report, Ninth Congressional District.

PROF. WILLIAM ROBERTSON, CROOKSTON.

This district, like all new regions, has not yet waked up in a general way to the fact that it can grow fruit. Neither will this waking up come very rapidly till the large farms are broken up into smaller ones. The big farmer, that is, the farmer who grows grain on a large

Otto Kankel and his Concord grapes, at Fertile—in Red River Valley, in Polk Co., Ninth Cong. Dist.

scale, has little patience with fruits or trees of any kind. However, the dairy and the clover are coming quite rapidly the last few years, and this means smaller farms and different farmers. The farmer who will

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take up dairying and rotation of crops may be depended on to interest himself in fruits. Also drainage is progressing in an extensive way, and with proper drainage I know of nothing to prevent growing fruits successfully in the Red River Valley.

About thirty letters of inquiry were sent out this year. To these five answers were received.

Apples: Varieties reported as bearing are Hibernal, Duchess, Wealthy, Anisim, P. Greening, Charlamoff, Tetofsky, and other varieties, names not known.

Crabs: Florence, Whitney, Martha, Virginia, Powers, Arctic, Pride of Minneapolis, Greenwood and Transcendent.

Plums: Surprise, Wyant, Forest Garden, Hawkeye, DeSoto, Aitkin, Wolf, New Ulm, Wood.

Raspberry: Loudon, Turner, Cuthbert.

Currants: Prince Albert, Cherry, Red Dutch, White Grape.

Strawberry: Perfection, Dunlap, Bederwood.

Gooseberry: Downing, Houghton.

Cherry: Compass.

H. L. Melgaard, of Argyle, reports a very good crop in all kinds of fruit and sent us some fine specimens. O. J. Hagen, of Hendrum, lays his light crop to lack of drainage.

Ground froze rather dry this fall. Very little spraying tried in this region yet. Transcendent crab reported as blighting. It is very desirable that everybody in the district plant some fruit each year.

Annual Meeting, 1909, North Dakota State Horticultural Society.

OLE. J. HAGEN, HENDRUM, DELEGATE.

The writer had the pleasure of attending as a representative of this society the annual meeting of the North Dakota Society, which was held at Fargo the second week in January, at the time of the annual gathering of the Tri-State Grain Growers' Convention.

A short program of horticultural and forestry topics had been prepared and was carried through with success before an appreciative audience. Prof. S. B. Green, of the Minnesota University, was present and delivered a practical address on "forestry", emphasizing especially the necessity and advantages of the growth of shelter belts upon the prairie farms of North Dakota and the difficulty of succeeding with fruits and horticultural ornamentation about the home without such protection.

For North Dakota there was an interesting exhibit of fruits, a number of plates of the different kinds of apples and crabs being shown and also some seedling apples, all grown in that state. Mr. Heath, of

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Fargo, delivered an instructive address on "small fruit growing" reciting his experiences in that vicinity in the past seven years, in which he has been successful in a commercial way. He spoke encouragingly of small fruit growing and that there was room for an expansion in that branch of horticulture.

Action was taken looking towards an application to the state legislature for an appropriation of $500 annually to assist the North Dakota Society in its work, there having been heretofore no appropriation for this purpose. It was also decided to put up a premium list for exhibits of fruit the coming year. The old officers were mostly all reelected.

Sixteenth Annual Meeting, Southern Minnesota Horticultural Society.

O. M. PETERSON, PRES., ALBERT LEA.

This meeting was held at Owatonna on Jan. 22nd and 23rd, a two days' session, and it was the first meeting held by our society at that place. The attendance was not as large as at some of our former meetings, which was doubtless accounted for by the disagreeable weather, but what was lacking in number was fully made up in enthusiasm and interest by those present.

The papers presented were exceptionally good, and the discussions following each were instructive and valuable for the information brought out. It is certainly time well spent for farmers and fruitgrowers to attend our meetings.

A report from our fruit committee showed that the apple crop in our section was the smallest in many years; still in Fillmore county a goodly number were grown, and some shipped out. The subject of "Commercial Orcharding" received considerable attention, and the main point brought out was that in order to secure the best results both as to quantity and quality of fruit we must take better care of our orchards by cultivation, mulching and spraying.

The subject of spraying was fully considered, and several good methods presented.

The election of officers for 1909 resulted as follows: O. M. Peterson, Albert Lea, president; J. C. Hawkins, Austin, vice-president; L. W. Prosser, LeRoy, secretary; Chris. Berthelsen, Albert Lea, treasurer.

C. F. Gardner, of Osage, Ia., was delegate from the Northeastern Iowa Horticultural Society, to whom we are much indebted for his wise council and helpful suggestions. Our meeting was favored with

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the presence of several of the charter members of our society, viz.: J. C. Hawkins and F. W. Kimball, of Austin; O. W. Moore, R. C. Livingston, of Spring Valley; and Clarence Wedge and P. Clausen, of Albert Lea. These men are the "pioneers" in the line of fruit growing in our section, and great credit is due them for their great work in the advancement of horticulture.

Our members felt much pleased with the Owatonna meeting, and thanks are due to the Messrs. T. E. and M. R. Cashman and D. M. Mitchell for their help to make the meeting a success.

Following is a list of the subjects presented on the program:

"Is Top-Grafting Practical?" Chr. Berthelsen, Albert Lea, Minn.; "My Experience with Top-Grafting," O. W. Moore, Spring Valley, Minn.; "Marketing Apples and Small Fruits," H. F. Hansen, Albert Lea, Minn.; "Will Commercial Apple Orcharding Pay in This County?" M. R. Cashman, Owatonna, Minn.; "Notes on Forestry," Fred Urfer, Twin Lakes, Minn.; "What We Are Doing in the Orcharding Line at LeRoy," L. W. Prosser, LeRoy, Minn.; "Notes on the Newer Varieties of Apples," Clarence Wedge, Albert Lea, Minn.; "Remarks on Horticulture," J. C. Hawkins, Austin, Minn.; "What We Are Doing in Iowa," Chas. F. Gardner, Osage, Iowa; "My Experience in Growing Strawberries for the Market," A. M. Wright, Owatonna, Minn.; "The Best Evergreens, How to Plant and Care for Them," C. M. Jensen, Albert Lea, Minn.; "Perennials," W. E. Fryer, Mantorville, Minn.

Notes on Meeting of Southern Minnesota Horticultural Society.

S. H. DRUM, WASECA.

The horticultural meeting in Owatonna was a very interesting occasion, but owing to the disagreeable weather was very slimly attended. I do not think that over twenty persons, other than the horticulturists themselves, were in attendance at any of the sessions. This was unfortunate, as a chance to hear such a number of veteran fruit growers is seldom had in this vicinity.

The papers read were all very good, and the subjects were pretty thoroughly threshed out in the discussions that followed. The meeting was more informal than the meeting of the state society, and nearly every one had something to say or some question to ask.

Among the papers was one on "Commercial Orchards," by M. R. Cashman, of Owatonna. He told of an orchard of Wealthy apple trees that the owner received $480.00 from last season. This orchard was four acres in extent and had been planted only nine years. He emphasized the fact that this had been accomplished by spraying and good cultivation.

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L. W. Prosser, of Le Roy, had a paper on the "Salome" apple, which led to a discussion as to what this apple and its tree were like and their good and bad qualities. It was brought out that tree peddlers some fifteen years ago sold quantities of trees in southern Minnesota and northeastern Iowa, representing some of them as "Salome." Most of these trees died, and the survivors were so different that it was difficult to identify them. C. F. Gardner, of Iowa, and O. W. Moore, of Spring Valley, took prominent parts in this discussion.

Mr. Gardner, in a paper on "What We Are Doing in Iowa," made so many points that it is impossible for me to report more than one or two of them. One was that in order to retain moisture in dry times it is profitable to cover the ground, in old orchards especially, four inches deep with mulch, barnyard manure preferred, and then let the hens have free run. This agrees with my experience, and I think accounts for the superiority of the fruit of orchards where this was practiced the last season, and where no spraying was done.

Mr. Wedge, of Albert Lea, gave us his experience with geese as scavengers in an orchard to eat the fallen apples. He claims that they will accomplish this satisfactorily.

Mr. C. M. Jensen, of Albert Lea, told how to plant and care for evergreens. In the discussion following it was shown that many of the pines and spruces will do well in one vicinity, and in another a few miles distant different varieties will do better.

Mr. Wedge, of Albert Lea, after speaking on "The Newer Varieties of Apples," showed us some "Delicious" apples. This is an Iowa seedling and is certainly a fine apple, and from the taste that I had is rightly named. It is said to be a seedling of the Jonathan.

The discussion on spraying was long, and all agreed as to its necessity. The question of spray pumps received a good deal of attention.

Mr. Thos. Cashman urged the necessity of thorough cultivation of young trees up to the middle of July, but not later, as late cultivation would keep the trees growing so the wood would not ripen in time for winter. After the cultivation ceased he would mulch to conserve the moisture and to get best results.

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The Unusual in Garden Vegetables and Their Uses.

J. VINCENT BAILEY, NEWPORT.

To be interested in the unusual, or little used, vegetables, does not necessarily mean that we have given up eating meat, but it does mean that we want a little more latitude in our diet. A narrow diet, although it was only healthful rice, never broadened the horizon of the Chinaman. The cucumber has failed to give breadth to the outlook of the Russian peasant, and the Scotchman has grown more and more clannish on his diet of oatmeal, while the Irishman never really becomes either a good policeman or a good American until he learns to eat something besides potatoes and salt.

We are cosmopolitan in America in our diet as well as other things. We accept the potato along with the Paddy, the cucumber with the Russian, and the rice with*out* the Chinaman. And not only have we adopted and adapted the usual vegetables of other nations, but we have been at some trouble to discover how to grow, and prepare for eating, a number of very little known vegetables. About these we learned a great deal from France, Germany and Belgium, where all sorts of strange vegetables are used in soups and salads. In trying to get some information about the uses to which certain little-known vegetables are put, I have consulted French and German chefs in the larger foreign restaurants of the twin cities. They gave me only a very general idea of their methods of preparing these vegetable growths, but they admit of a wide latitude in the matter of seasoning, etc.

I have made it a special point to gather material about vegetables that are known to some extent in this country. In the countries of Europe and the Orient there are a great many edible plants—especially in the cabbage family and of the seasoning order—that have not been tried in America. Until they have been successfully grown by capable experimenters and are recognized as possiblities for our table, it is useless to discuss them in detail.

It is only within the last century that corn and tomatoes have been used by the civilized world. Probably the next century will find us sitting down to dine on cactus and even on some descendant of quack grass. In the meantime, we ought perhaps to make more use than we do of the vegetables at our command, and the first step to be taken in this direction is to learn how to grow them and how to serve them.

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There is no vegetable with more relatives than the Cabbage. It is the fat and popular head of a large and growing family. Most of us know something about its cousin, the Kale, which has no head of its own, but has many curly leaves growing along a stalk. The leaves are used for greens when young, or they can be left out to freeze and used during the early winter months, as freezing does not hurt them if they are not handled in a frozen condition.

The Kohl Rabi is a vegetable intermediate between a cabbage and a turnip, and resembles both in flavor. The edible part is a turnip-shaped bulb formed by the enlargement of the stem. When used for the table they should be cut when only partly grown, as they are woody when fully matured. Their cultivation is much the same as that of the cabbage.

J. Vincent Bailey, Newport.

Brussels Sprouts is another cabbage cousin, growing two or three feet high. The culture and soil needed is very like that of late cabbage, as it requires cool fall weather to develop the sprouts, that grow all the way up the stem. A nice way to serve them is to boil, the same as cabbage, and serve with butter, or cook in cream like cauliflower. They have not been grown very successfully here, although some market gardeners grow them commercially. In climates where they do well, they are planted successively during the summer.

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Broccoli is a vegetable that originated from a distinct type, but the modern improved sorts of broccoli can hardly be distinguished from Cauliflower. The main points of difference being that they are taller and the heads more divided. In culture and use they are much the same. Broccoli does best where the seasons are long and cool and moist. It has only this advantage over cauliflower, that it stands more extremes of weather and is therefore easier to grow.

The last of the cabbage cousins is the Collards, which is something like the kale, but grows tall and has a mass of leaves at the top of a stem. The Collards are used for man and beast—for the latter as a forage—and where the winter is not too severe the stalks are left standing all winter, or they can be stored in this climate and set out in early spring, when new shoots will start all along the stalk. These make the best of greens for the table and are cooked the same as spinach.

Leading the class of salad vegetables is the Endive. This is a French plant but is used a great deal by the Germans. This plant can be used as greens, but when properly blanched makes a splendid salad. Although it can be raised best during the cool of the fall, it may be had early by sowing the seed in hotbeds and transplanting. If planted for late use sow the seed in open ground in July and thin to a foot apart. To blanch tie the outer leaves up around the inner part when the plant is dry. This should be done about two or three weeks before using. The plant may be stored in the cellar by placing the roots in moist earth, thus insuring one of the best salads for winter use.

Probably next in importance in this class is Cos Lettuce, a plant of Roman origin which is used a great deal for garnishing as well as salad. This plant is grown much in Italy and France. It is a distinct type of lettuce which grows to a large size and is exceedingly crisp and tender when properly blanched. Although this type of lettuce has a tendency to form a loose head which blanches itself to a certain extent, it is best to tie up the outer leaves over the head, thus insuring perfect blanching. The care and cultivation is much the same as lettuce, but it must have more room on account of its large size.

Corn Salad is a plant which has a variety of uses, garnishing, and also as a substitute for lettuce, and is sometimes cooked for greens like spinach. It is used chiefly in winter and spring, as it grows best in the cool of the fall. By covering with a mulch of straw it can be used any time during the winter or spring. It is grown much the same as spinach.

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Chevril is a hardy annual used like parsley for garnishing dishes. The seed is sown in hotbeds and transplanted a foot apart each way.

Roquette, another hardy annual, completes my list of salad and garnishing vegetables. It has glossy leaves and when young can be used like mustard for salads.

Soup vegetables are used in a wide variety in the oriental and tropical countries. In this class is the Okra, which is the Gumbo as commonly used in the West Indies. It can be raised quite successfully in this climate by planting the seed in the late spring in the open ground, two by three feet apart. The edible part is a pod, which is used for soups and salads or stewed like asparagus, and admits of drying for future use.

The Salsify is sometimes called the vegetable oyster on account of its oyster flavor. It may be cooked in as many ways as an oyster. It is sown in open ground in the spring. Like the parsnip it may be stored in sand for winter use or may be left in the ground and dug in the early spring. The soil and culture should be the same as that of the parsnip.

The Celleriac, or Turnip-Rooted Celery, should be grown far more than it is, for in this climate it makes an excellent substitute for celery. It will grow in any good soil and will keep all winter in sand in the cellar. The plants are raised in hotbeds and transplanted and cared for much the same as any other root crop.

We all know the Leek by hearsay or smell. It easily leads the seasoning plants in strength. The leek is much like an onion. Of French origin, it is raised to some extent in this country. It may be started in a hotbed and transplanted, or sown in open ground and thinned to six inches in the row. It should be earthed up when growing.

Even more like the onion in growth and flavor is the Chives, a thick, grassy-like growth, shorn off as it grows, and used as a flavoring for soups. The under part is used as a salad. It is very early, and is grown either from seed or division of the roots.

The pungent, peppery Peppergrass is liked for salads and to mix with lettuce. It grows very quickly. This makes it desirable for early spring use.

Among unusual vegetables, I shall mention but one herb—Tarragan—which is a native of Siberia and of perennial growth. It is used for seasoning, like mint, and is propagated by dividing the tufts of roots, as its flowers are invariably barren.

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The Egg-Plant is still unusual. It is cultivated much like tomatoes and may be sliced and fried like apple fritters.

Another vegetable which may be considered unusual is the Swiss Chard, a biennial native of southern Europe. It is raised much like the beet and is really a reversed form of the beet, with its edible part at the top instead of at the root. Its leaves make excellent greens, while its leaf stem is used as a vegetable.

A good pickling vegetable is the Martynia, which is of English origin. The plants are started in hotbeds or the open ground and thinned. Its pod is shaped like a unicorn and covered with a fuzzy skin. They are pickled like cucumbers, but must be used when young as, like other pod vegetables, they become tough and stringy when full grown.

The President: There is one vegetable that Mr. Bailey did not mention that I had a taste of a few days ago, and that is garlic. A friend of mine and I stopped at a new settler's cabin in northern Minnesota a few days ago, and they gave us blood sausage flavored with garlic for dinner, and it was so strong that my friend could not recognize the sausage, but he thought it was great stuff because it stayed by him all the afternoon.

Mr. J. M. Underwood: I would like to know how to grow head lettuce.

Dr. H. M. Speechly, (Man.): I don't know what the gentleman means by head lettuce, but Mr. Bailey has left out in his statement of varieties the English broccoli and lettuce. I am quite well aware that German and French growers have these things, but I would recommend to Mr. Bailey to read the English authorities on these subjects, and I would be glad to give him the names of books. I have been familiar since a boy with broccoli and endive, but in Manitoba I would never plant broccoli. I have, however, grown cos lettuce. It is the best lettuce I can grow. I sow my seed in a box and transplant it four inches apart, and when it is large enough I tie the leaves together, which gives a very white and tender interior, and that lettuce is exceedingly good for the table. In regard to peppergrass, which is about the same as cress, my wife and I generally grow that in the early days of March. We take a white plate and sow the seed in it and keep it covered with water. That grows up in a few days, and you have a nice crop of pepper grass which adds very much to a salad. Some of the ladies may not know of this method, but it is a nice, clean way of growing peppergrass.

Mr. R. M. Probstfield: I can tell you how to grow head lettuce. I have used it for fifty or sixty years; I can grow it the same as other lettuce. If you take care of it, you can raise head lettuce just the same as you can any other kind.

Mr. C. S. Harrison (Neb.): You have to plant it farther apart, it takes more room.

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The President: It is quite a trick to raise it early in the spring.

Mr. Brackett: I have grown the other lettuce under glass to a large extent, and I have spent considerable money in trying to grow head lettuce. I know here in Minneapolis and St. Paul we find especially there is no greenhouse man who makes much money growing head lettuce. It is difficult to grow head lettuce under glass.

Mr. Probstfield: I don't raise it under glass, the only way I grow it is outside.

The President: Varieties like the Hanson and others can be raised in good shape.

Mr. Underwood: I have never grown any lettuce fit to eat except head lettuce, and I have never been able to grow either crop easily. If I knew how to grow it, I would grow head lettuce because there is no other fit to eat.

Mr. Crosby: Where I live it will almost grow in a night. I have some grown on a northern exposure. I simply plant it in hills, and it grows very rank; there is no trouble at all in growing it in our country.

The President: I visited a lettuce grower who makes a specialty of head lettuce, and he says it is difficult to grow. He takes great pains in growing it. Where he plants his lettuce he has his soil three feet deep. I asked him if it was necessary to have the soil three feet deep, and he said he could not make it a success without it. I asked him about watering it, and he said he never watered it. He said if any one wanted to do a mean thing he would water his lettuce, and he said he would shoot any man he caught doing it. I don't think Mr. Gibbs waters his lettuce from the time he plants it until the time he takes it out. I know it is considerably more difficult to grow head lettuce than it is the other varieties.

Mr. Gibbs: I know it requires a lower temperature at night and a higher one during the day. You can let it go nearly to the freezing point at night, but in the day time you want a pretty high temperature.

MULCHING POTATOES.—Seven years' experience at the Nebraska experiment station indicates that mulching is a fairly satisfactory way of growing potatoes on a small scale, although the method is practicable only when the mulching material can be obtained very cheaply. Old hay or straw should be spread about 4 inches deep just before the plants appear and after the ground has been harrowed once or twice after planting. Rather large seed pieces should be planted 2 or 3 inches deep and the hills should be placed 18x18 or 12x24 inches.

TO DESTROY CANADA THISTLE.—A good method is to go over the ground once every two weeks after mowing in June and cut off every thistle about two inches below the surface with a hoe or spud. A spud made of a strong, sharp chisel on the end of a pitchfork handle will be found most convenient for this work. The second year the spudding should begin as soon as the thistles show in the spring, and should be continued through the season, although there will be few to cut after mid-summer, if the work has been well done. The land should be looked over occasionally each year afterward to detect and destroy plants that may spring from dormant seeds.

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In Memoriam.

NILS ANDERSON

Died Sept. 26, 1908. Age, 64 Years.

The subject of this sketch was born in Sweden June 16th, 1844. He emigrated to America in the year 1869 at the age of twenty-five. The first five or six years he was in this country he worked out on various farms, but in the year 1874 he bought a farm of eighty acres, the one which he occupied up to the time of his death, in the town of Mt. Pleasant, about five miles west of Lake City. Soon after acquiring this property he planted a small orchard of two or three dozen trees a little east of his house. Having a taste for work with trees, he soon began grafting, and it was not long before his neighbors, noticing his work, asked him to do some grafting for them, and from that he went on until at last he had gotten together considerable nursery stock and was doing quite a business in this line. Later from time to time he increased his orchard plantings until they aggregated about twenty acres. He took a great interest in this work and was especially successful, his location being an unusually favorable one for orchard fruits. His experiments in the growing of plums met with unusual success, and at the time of his death he had many varieties in bearing, some of which, especially of the Domestic plum, were scarcely as successful at any other point in the state.

Mr. Nils Anderson

Mr. Anderson for many years had been one of the principal exhibitors of fruit at the state fair, at the last fair making one of the largest exhibits that was shown there. Shortly after his return home

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from the state fair he was kicked by a vicious horse, which within a brief time caused his death.

Mr. Anderson was married in 1875 to Miss Anna Moline, who was still living at the time of his death, as also were seven children, five boys and two girls.

He had been a member of this society for many years, and while not prominent in the discussions, being of a retiring disposition, he was a faithful friend and worker with this association, and was ever ready to take up any service that was requested of him, which he performed with credit to himself and much advantage to the association. A kind and loving husband and father, an excellent neighbor and true friend—a loyal fellow member, and one leaving a record that is in the highest degree satisfactory to those from whom he is now temporarily parted.—A. W. Latham, Secy.

Unselfish and Useful Work.

PROF. S. B. GREEN, ST. ANTHONY PARK.

We have had a number of examples of unselfish devotion to the cause of horticulture and agriculture, and in many of these cases, while great benefit has come to mankind as a result of work in the way of originating new varieties of fruits, the originators themselves have benefited but little from it.

Last summer I had the good fortune to attend the Hubbard county fair, and among the most praiseworthy exhibits that I saw there were a number of fruits that had been originated by James Arrowwood, of Nevis, Minn. Among these were several plums, evidently seedlings of our best selected native sorts, which were all large and of good quality, and from which we may quite likely get something really desirable for our standard fruit list.

Among varieties exhibited which had been named by Mr. Arrowwood were the Hubbard County, the Red Dinver and the Sunlight, all of which ripened about September first. A variety called the Blush is yellowish in color, with a decided red cheek and very pretty. The specimens of the latter exhibited were about five inches in circumference. Another variety was called the White Egg, and still another the Yellow Dinver. The latter was of excellent quality.

A number of years ago Mr. Arrowwood planted the seeds of some California prunes, and from them has several varieties that have fruited with him. These ripened about the fifteenth of September, and he says they are perfectly hardy. He has a new grape that he

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says is a cross between the wild grape and the Concord. It is something like the Beta and, like that variety, is very productive. It is perhaps not quite so acid.

Mr. Arrowwood delights in the work of originating new varieties of fruits, and says that he is "going to succeed and develop some good, hardy fruits if the good Lord will only let him live long enough." In addition to grape and plum seedlings, he is also doing some work with seedling apples, that he thinks is destined to produce valuable results.

It is men like Mr. Arrowwood, who take a pride in this kind of work, who have done so much to develop the horticulture of this section; and, in fact, the horticulture of the whole country would have amounted to but little had there not been many such persons who delighted in work of this kind.

FOREST SERVICE IN 1908.—Chief Forester Gifford Pinchot has just issued a statement of the work done by the United States forest service for the fiscal year of 1908. The administration and protection of 182 national forests cost $2,526,098, about 1½ cents an acre. Many improvements made enabled the forest officers to carry on their work better than ever before, and also opened up to forest users territory hitherto inaccessible. Forest investigations cost $235,855. Receipts from sales of timber, grazing fees, and other sources amounted to $1,842,281. There were 30,714 permits for the free use of timber by settlers, schools and churches, the valuation being $168,720. The grazing receipts were $962,829. The year's receipts represent profitable use of the forests by some 30,000 individuals in addition to more than 30,000 who had free use of timber and other resources. Over 2,200,000 trees are now growing at planting stations ready for setting out this year.

BEST WAY TO HANDLE EVERGREENS.—There are a few simple rules which must be observed in handling evergreens from the time they arrive at the railroad station until they are planted. By all means do not unpack at the railroad station, and do not open the box until you are ready to set the trees. This is a most important matter. Roots of evergreens must not for a single instant be exposed to the sun or wind. This is more important with evergreens than with deciduous trees, for the reason that the roots of evergreens contain pitch, while the roots of other trees simply contain sap. While it is not desirable to expose roots of any trees to the wind or sun, they can be partially revived by soaking and placing in a cool place. With evergreens it is different. If the pitch in the roots is allowed to dry, it is absolutely impossible to revive the trees by soaking. This is another reason why it is very important that northwestern farmers should buy trees from nurserymen who produce them scientifically and sell them on the guarantee basis.

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SECRETARY'S CORNER

San Jose Scale Possibilities in Minnesota.—Prof. F. L. Washburn, State Entomologist, St. Anthony Park, has issued a little circular containing information in regard to San Jose scale in this and adjoining states. It is illustrated and will be found interesting to those who would like to know what is going on in a horticultural way. Copies may be had free by addressing Prof. Washburn.

Mr. Schutz at the Winnipeg Meeting.—Mr. R. A. Schutz, one of our efficient institute workers, as planned attended the Winnipeg meeting Feb. 17th and 18th as our representative, but to do this, returning from Winnipeg to Park Rapids—where he met the institute corps again—he had to be up all night, changing cars three times at different points. He says it was worth it. We anticipate with pleasure his report, which comes too late for the March number.

Annual Membership in the Society.—The annual membership roll for the current year at this date, Feb. 24th, stands at 1790, which is 162 more than a year ago at the same time. This is a very satisfactory showing considering the condition of the weather and roads blocked with snow throughout the state during the last two weeks. More than the usual number of members have sent in new members since the last annual meeting, which accounts in part for the increase.

Seed for the Apple Seedling Contest.—There is still some seed on hand in the secretary's office for this interesting contest, which can be secured at ten cents per packet of twenty-five seeds or three packets for twenty-five cents. Most of it is from Wealthy apples, but the last lot in, from Mr. Seth Kenney, is taken from Northwestern Greening apples, necessarily crossed with other varieties in his variety orchard. Every member should take part in this interesting contest.

Have You Sent in a New Member?—Please look over the list of premium books offered by the society which are given as premiums in connection with this kind of service—and this ought to be an easy way to secure them, in the meantime doing much good to your fellow. Prof. Green's new book on fruit growing entitled, "Popular Fruit Growing," is expected from the press every day now. A copy of this book can be had without expense by sending the names of two new members. Such new members are entitled to all the privileges of membership, including plant premiums.

New Life Members.—Since and including the last annual meeting of the society there has been added to the life membership roll eleven names as follows: M. D. Hartman, St. Paul; S. A. Carlisle, Wyoming; C. E. Older, Luverne; G. R. Mills, Buffalo; R. F. Chambers, Redwood Falls; Wm. F. Wentzel, Crookston: Aug. E. Wentzel, Crookston; A. H. Gates, Rice; H. G. Knight, LeRoy; Johannes Paulson, Minneapolis; N. V. Spencer, Park Rapids.

There is still room on this roll for others, and at present we are prepared to supply something like twenty-five numbers of the back reports of the society to new life members. An invaluable library for those interested in horticulture.

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PURITY IN INSECTICIDES.—Prof. F. L. Washburn, State Entomologist, calls our attention to a bill now before Congress, H. R. No. 21318, regulating the manufacture of insecticides and fungicides, as there is a great deal of complaint as to the poor materials used in these preparations. The effect of this if enacted will be to secure purity in their manufacture. It is suggested that members who are interested along this line should correspond with their senators and representatives at Washington in favor of this measure. Early action is desired.

THE AMERICAN APPLE ORCHARD.—In this book by Prof. F. A. Waugh chief prominence is given to modern commercial methods as practiced in large and up-to-date orchards, but there is a special chapter also on the family orchard.

The principal topics discussed are the geography of apple growing, apple soils, exposures, windbreaks, winterkilling, starting an orchard, propagation of trees, cultivation, clover crops, pruning and fertilizers, insects, diseases, spraying solutions, spraying machinery, spraying methods, harvesting and marketing, the family orchard, renovation of old orchards, selection of varieties, catalog of varieties. Illustrated, 5x7 in., 226 pages. Cloth. $1. Postpaid.

RECOGNITION FOR MR. PATTEN'S WORK.—Arrangements are being perfected through which, by the cooperation of the Department of Agriculture, the Iowa Experiment Station and the Iowa Horticultural Society, as we understand it, Mr. Patten will receive some assistance in the invaluable work which he is carrying forward in the growing of seedling fruits, and in special recognition of the value of his services in this direction the Department of Agriculture will confer upon him an appointment as expert breeder, the appointment carrying with it a modest salary. Mr. Patten's many friends in Minnesota, will rejoice with him in this development, and especially that the state and national authorities recognize in this formal way the value of what he is doing. The people have long known of it, and have wondered oftimes why our agricultural department, which is so efficient in many directions, should not have lent a hand to Mr. Patten as well. Mr. Patten has a large number of seedling fruits of value already in fruiting, both of the apple and plum, and a great amount of material on hand still in embryo condition. We expect to hear of further good things from his station before long.

NEW LEGISLATION ABOUT REPORTS.—The bill in regard to the printing of more reports for the society, reference to which was made in the Secretary's Corner of the February number, was introduced into both houses early in February. In the senate it is file No. 300; in the house it is file No. 484. The bill has been before the house committee on horticulture and received favorable consideration, having been reported back to the house for passage, and we anticipate a similar result of its appearance before the agricultural committee in the senate. No opposition to the bill has developed, so that there is every reason to believe that it will become a law.

The bill provides for the printing of 7,000 reports instead of 5,000, as at present, and an appropriation of $4,000 to pay for the same instead of the present appropriation of $3,000.

Members of the society are earnestly requested to write to the members of the legislature from their districts urging the passage of this bill, which is vitally connected with the growth and efficient service of the society. Last year we were unable to furnish at least 300 members of the society with the report to which they were entitled, and it will be fully as bad this year—nor could we even furnish the members of the legislature with copies as required by law.

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A Fruitful Corner in Gust. Johnson's Blackberry Field, at Excelsior, Just South of Christmas Lake.

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THE MINNESOTA HORTICULTURIST

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How to Grow Blackberries with Success in Minnesota.

GUST JOHNSON, EXCELSIOR.

The successful growing of blackberries is not what we may call a well beaten road, but a narrow path on which very few people travel. People become enthusiastic over strawberries, which extends to raspberries, and there it dies out. There is no ardor left for the blackberries. Hence they are the most neglected fruit—yet none is more delicious when properly ripened, and there is no other small fruit that sells at such high prices in most markets as the blackberry. The demand is usually only partly supplied, making it one of the most profitable fruits to raise.

The blackberry is not particular as to soil and location. There is no advantage in selecting the best land for planting, as the canes would grow so large and tall as to require much time and expense to prune them. The annual crop may be compared with government bonds, the principal remaining to produce more. I have learned since commencing blackberry growing not to plant them on the best land, and if I had the choice of land I would plant them on sandy loam, well underdrained if inclined to be wet. As I have said before, the successful growing of blackberries is up to yourself.

I am going to give you some pointers which I have learned from experience of about twenty-two years growing of this delicious fruit, and if you follow that path I don't see why you should not make a splendid success.

Give plenty of room between the rows. Make special note of this, or you will regret it afterwards. In order to secure good fruit you must give frequent cultivation, and you need the room to work between them.

One of the first causes of failure is planting late in the spring, as the tender shoots get broken, and then there is no cold, moist weather to start growth. Plant in the fall any time after October 1st, throwing a forkful of strawy manure over each plant, first making the ground highest over the roots.

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After the new canes start to grow, the plantation should be gone over several times during the summer, and the tops of young canes as they appear above the bearing bushes should be shortened in so as to keep them at a uniform height of three or four feet, according to their strength. This will induce the side branches to grow vigorously and develop fruit buds near the ground, and interlocking with each other the bushes will support themselves, thus avoiding the necessity of stakes and wires to prevent the wind from injuring the tender canes. The side branches should be shortened in during the summer and fall of the year. Plants thus treated will yield more fruit of better quality than if left to grow tall and slender, as they are inclined by nature to do.

When your blackberries come into bearing you should see to it that from the time of blossoming your berries do not stop growing. It is the drought we usually have in July which stops their growth until the rains in August, and your berries will ripen in September instead of August, and then they are out of season. The berries are not as good then, and other fruits come into the market and take their place. That is why there is complaint about the Ancient Briton. As soon as the nights commence to get cold they ripen slowly, and if it is dry some of them do not ripen.

You must watch your berries if they run small and seedy and see if the leaves are not affected with rust, which also affects the canes. If not understood, it might be thought to be caused from drought.

The great secret in blackberry raising is to have your berries ripe and juicy, but not overripe. As soon as a blackberry is soft, it will not bring half price. The berries should be handled very carefully in picking, and the boxes picked just full enough without being bruised. What you should look out for is to not get the berries too ripe and also to have them marketed as soon as possible.

If you cannot sell your berries yourself, find an honest man to sell them for you who will give you returns for what they will bring except the commission.

After the berries are picked all the old canes should be trimmed out and burned up at once. Three men can lay them down to best advantage. One man to shovel, the second to take out a forkful of ground on the side toward which the cane is to be bent and then putting the fork into the ground on a right slant to bend the bush over. If placed too far under the bush you are liable to lift it out when you pry it over. At the same time the third man with a four-tined long handled fork is getting the tops together and pushing down on them,

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while the second man is bending them over in the roots. The first man cannot have time to cover them as fast as two men bend them down, and he only puts on enough to hold them down. Later all can work together and finish covering up the canes before freezing weather.

For a farmer for home use I would recommend to plant Snyder and cultivate the first part of summer and seed down to clover, and then covering won't be necessary—only to mow down the grass between the rows for mulch.

Summing it all up: plant good healthy plants; keep them growing by frequent cultivation; don't plant on low, rich soil; don't leave the berries on the bushes after they are ripe; handle the berries carefully when picking, and pick only those which are black; handle them all very carefully—and you must not for a single moment think blackberries can't be grown successfully in Minnesota. You will find you won't have to go to the Pacific coast to raise fruit but have great possibilities right near a good market. We have the land; we only need men to handle the shovel and cultivator, and we have a Klondike right here.

Mr. Gust Johnson: It is kind of a thorny subject that was assigned to me, but I can assure you that the blackberry is one of the nicest fruits we can raise, altho it is a fruit that is very little grown, because people have an idea that blackberries can not be raised very easily. That is simply because they do not understand how to handle them.

The President: Mr. Johnson has given us a most excellent paper, and if you have any questions to ask him, I am pretty sure he can give you the information you want.

Mr. Frank Stifter, (Cokato): I raised some myself, and I have a sort that I do not have to cover. I have canes on my blackberries that grow eight to ten feet high. They run around between the plum trees and grow eight to ten feet high, and I have to set props under them to hold them up. My blackberries are perfectly hardy. It depends a great deal on what kind of soil you have. When I came here the timber was full of blackberries. I dug some right out of the woods. I marked them when I found a good kind, and in the spring I would take them home and plant them, and all of my blackberries are growing right in the open ground. I have had them now for about ten years and have never covered them—I have let them grow just as they will. Strawberries are all right in the north because the snow covers them, and people who grow them are better situated in that respect than we here are on the open ground. In regard to blackberries and raspberries the difference is in regard to the ground in which we plant them. Any kind of berries will grow as well in the north as here, or even better. North of us they have a heavier snowfall, and they are thoroughly protected beneath the snow. I never cover any strawberries on my place: the snow stays right on until spring. I have grape vines that are twenty feet long, and I have never covered them.

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Mr. Johnson: His blackberries are in sod, and blackberries will not kill out in sod.

Mr. Crosby: I would like to inquire what variety the gentleman has that do not need covering.

Mr. Stifter: They are the wild blackberries.

Mr. Johnson: The Snyder will come thru in sod without covering.

Mr. Geo. J. Kellogg, (Wis.) Why don't these men plant the dewberry?

Mr. Johnson: It is not much work to lay down an acre of blackberries. Three men can do it in a very short time.

The President: I want to know whether it paid Mr. Johnson to put down his blackberries.

Mr. Johnson: If anything pays for the labor it is the covering of blackberries.

The President: Then it did really pay?

Mr. Johnson: Yes, it has paid more or better than any other kind of fruit.

The President: We can take it in any line we please, if we can not make our work pay there is no use in doing it.

Mr. Johnson: If there is anything at which I can make wages it is at covering blackberries.

Mr. Wyman Elliot: I would like to cite an instance right along this line. Mr. Johnson is situated on one side of the fence, and my nephew on the other, way down under a hill. He has a piece of ground that was originally a maple grove, low ground, from four to eight feet above a marsh. On that ground he has planted blackberries, and they are there for the third year, and from that piece he has picked at the rate of seven hundred quarts per acre this year. It is the Snyder, and he claims the Snyder is a much better berry for him than the Ancient Briton. He has some other varieties which will be dug up and thrown out, and he will grow nothing but the Snyder and the Ancient Briton.

The President: These are hard facts, it is the snapper that is necessary at the end; that is what we want, just the facts in the matter.

Mr. A. J. Philips, (Wis.): I think Mr. Hanchett, of Sparta, is here, and he has had plenty of experience with the blackberry at Eureka.

Mr. W. H. Hanchett, (Wis.): I will agree with Mr. Johnson that the blackberry is one of the most profitable fruits that I can raise.

The President: Now hold on, Mr. Hanchett, we are not going to let you go that way. Tell us about your blackberries. How much have you got in?

Mr. Hanchett: About ten acres of blackberries.

The President: That is not an afternoon job covering ten acres of blackberries.

Mr. Hanchett: Mr. Johnson has described our method so well that I need not say more. The principal thing is the covering, and altho you can raise berries without covering them some years, yet if you cover them and take the proper care of them, they will make dividends that will make Standard Oil stock look cheap. (Laughter and applause.)

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The President: What variety do you grow?

Mr. Hanchett: The Eldorado.

The President: Do you grow the Snyder?

Mr. Hanchett: I used to grow the Snyder and the Ancient Briton, and I would not plow them up until I had tried the Eldorado thoroughly. It is always a good idea to find a variety well adapted to the conditions of the grower.

Mr. Elliot: What is the nature of your soil?

Mr. Hanchett: The soil is a loam, a clay loam.

The President: Sandy surface, porous soil?

Mr. Hanchett: It has some sand, but it is more of a clay mixture. We have, however, people with sandy loam who are succeeding very well with the blackberry.

Mr. J. M. Underwood: I would like to have Mr. Johnson clear up one thing. I understood him to say that blackberries should have cultivation, and then he also said keep them in sod.

Mr. Johnson: I said if a farmer does not want to cover them he should keep them in sod.

The President: How about the fruit?

Mr. Johnson: Well you don't get so many, but you get some. (Laughter.)

Mr. A. B. Coleman: I would like to know what kind of varieties of dewberries Mr. Kellogg would grow?

Mr. Geo. J. Kellogg, (Wis.): There are two varieties principally grown. I have very little choice in varieties, but there are two that are commonly advertised. The trouble with the dewberry is that it is not taken up in the spring and tied to a trellis. If you don't do that, you don't get the fruit. If you let them run in the summer time, you will not get good fruit. It is just as easy a thing to cover as the strawberry.

Mr. Coleman: What kind do you grow, or what kind would you recommend?

Mr. Kellogg: The Lucretia and the Bartel.

Mr. Coleman: I have them fifteen feet long.

Mr. Kellogg: Pinch them back in the summer and don't let them grow so long.

The President: They bloom, but they don't set any fruit. I set them as much as four years ago and got one good crop. They bloom every year. However, Mr. Kellogg's may do well.

Mr. Brackett: I would like to ask Mr. Hanchett how the Eldorado compares with the Snyder?

Mr. Hanchett: I don't say that it is any different. I would not say it was hardier than the Snyder. We had to give the Snyder winter protection, but I agree with Mr. Johnson that if a farmer wants to raise blackberries he can raise them in sod, and he can get some berries.

The President: But he can raise more sod. (Laughter.)

Mr. Clarence Wedge: I would like to ask Mr. Hanchett in regard to the health of the foliage of the Eldorado. Did he find it as healthy as the Ancient Briton?

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Mr. Hanchett: With me it is more healthy than the Ancient Briton, but I would not say it is as healthy as the Snyder.

The President: I would rather have two rows of blackberries laid down and taken care of than twice that number not taken care of. It would be more satisfactory to all concerned.

Fourth Season in Improvement Work.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

Perhaps the detailed record of the progression of an improvement club in a small city may not have much of interest for the average audience, who are after amusement or personal instruction. This improvement work is comparatively new, and while many may listen there are only a small number who will realize that *they* are the ones individually who ought to ponder on the subject and then inaugurate a similar movement in their own locality. Many will acknowledge readily that the conditions in their towns are "simply scandalous" and then go on to relate the old familiar story of poor sidewalks, ungraded streets, unsightly fences, etc., little thinking that because they are conscious of these imperfections they are the very ones to set the ball rolling for a change. Our great thinkers, ministers, doctors, lawyers, scientists, statesmen, sociological workers, etc., all concur in the opinion that the "brotherhood of man" requires that after we have cleaned up ourselves and our own surroundings we are responsible for the rest of humanity, and that our efforts must not be relaxed until the leaven has stirred the whole community.

Many are deterred from public work by taking too seriously the discouraging remarks of the thoughtless and of those who naturally take a dark view of life. Such should read "Are You a Bromide?" and, for the sake of advancement along physical, mental, and spiritual lines, class themselves forever after with the sulphitic type of humanity, who favor activity in all ways that will prevent stagnation and who will be found willing to put their shoulder to the wheel that will turn down relentlessly every opposition to progressive effort. There are so many who have faith only in what has been done by their progenitors—they have no conception of what a change of routine might bring in the way of improvement. They lack imagination, enthusiasm, brotherliness—let us call it by its right name—they lack progressiveness.

Improvement clubs have been formed in many places, but where one town feels the call, there are hundreds that are still slumbering, content with their untidy, unwholesome surroundings. They must get

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into step in the march of improvement, or they will die and be forgotten, and be classed with the other "dead towns" which have lost their best citizens through lack of inducements and attractions to hold them, and which are waiting for a day of resurrection or, Micawber-like, for "something to turn up." Changes do not "turn up" of themselves; there is always a motive power that recognizes the necessity for action, that furnishes the opportunity, and all that is required is the persistent worker who does not know the word "failure."

In the past it was rather problematical as to how an improvement club should be started, what to take up, but now with the many organizations that are working successfully there is an opportunity to profit

A beautiful corner in Depot Park, at Lake City, showing results obtained by careful combination of shrubs, herbaceous plants, etc.

by the successes and failures of others, and more rapid progress can be made. Then, too, a large proportion of the periodicals in our country devote more or less space to exploiting best methods of landscape gardening and urging united public effort, so that people are much more familiar now than formerly with the term "public improvement." It seems to be the experience of the clubs now formed that they almost run themselves. As soon as the wave of improvement is felt, it is so easy to get a project started. If a club has succeeded in carrying some plan through to a satisfactory finish, and all are conscious of the added lustre to the town, a new project propelled into a community, however startling or apparently revolutionary, will not create as much consternation as was evinced in the beginning by proposing to get up a fair or an oyster supper for raising money.

In making plans always try to bring all classes of people into the work, for improvement work does not apply to just one set of people

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or to one part of the town—to be of value it must be general. Example is the ideal way to teach improvement. One thing leads to another. Cement walks are so clean, nice and smooth. When every lot in a block but one has a cement walk, the owner of that one lot is going to have a hard time of it until he tears up his wooden planks and improves too. Members of a club must use a great amount of policy, discrimination (I like the word "tact"), in meeting the members of a community. I have in mind a land owner who opposed electric lights, waterworks, removing fences and wooden sidewalks, etc. His grounds were surrounded by weeds and refuse of all kinds. The executive committee considered many plans for bringing him into line, many were the suggestions as to how he could be set right. We were all agreed that something should be done, but some were afraid to broach

Oaklyn Park before Improvement.

the subject with him, and the rest of us "dassent" do it, and he was left alone. Each year has chronicled an improvement, and the club now, metaphorically speaking, hug themselves for joy as they speak of the great changes that have occurred on this property.

This is supposed to be a report of the "Fourth Season of Improvement Work" in our city. At one of our meetings a letter addressed to our club was read. It was from the captain of our ferry boat. He had been asking the city council to establish some place where patrons of his boat, as well as of others, might wait under cover, but without result, and now he appealed to the improvement club, closing with these words, "Your Improvement Club has the record of accomplishing things, and I know that if you will take the matter up it will be attended to." You can realize that we felt our importance with such commendation, and our committee at once began to look around and found that there was a vacant lot near the landing that could be secured.

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A few influential citizens convinced the council that it was the proper thing to acquire this land, and it was done. The building will necessarily have to come later.

We found our park board of inestimable value in furthering improvement schemes. The gentlemen love the work and put their whole soul and their spare time into it, and results prove their earnestness. They wanted a merry-go-round for the children's playground, and how proud our club was to be able to head the subscription list with $50! We are pleased to find the people enthusiastic and ready to take up new measures. As a city we have been much hampered by our charter, which seemed to be unchangeable. So the "Home Rule Charter" law has been looked up and found to be just what we wanted, and fifteen progressive citizens were appointed who will undoubtedly engineer the measure through at the coming election. With fifteen representative men on the watch over the welfare of our city we may rest assured that all will be well cared for. All the citizens of the smaller cities, towns and villages should avail themselves of the "Home Rule Charter" law, a portion of which reads as follows—with headings of the following sections:

Oaklyn Park after improvement.

"HOME RULE CHARTERS.

"*Patrol Limits:* Any city incorporated prior to November 8th, 1908, or any village, whenever incorporated, desiring to be organized as a city, may frame a city charter for its own government in the manner hereinafter prescribed: Provided that, in such cities having patrol limits established by charters, such limits shall not be altered unless the charter proposing such alterations be adopted by three-fourths majority.

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"*Board of Freeholders:* Whenever the judges of the judicial district in which such city or village is situated shall deem it for the best interest of the municipality so to do, they may appoint a board of freeholders to frame such charter, composed of fifteen members, each of whom shall have been a qualified voter of such city or village for five years past; and upon presentation to them of a petition requesting such action, signed by at least ten per cent of the number of voters of such municipality, as shown by the returns of the election last held therein, they shall appoint such board. The members shall severally hold office for the term of four years, or until they cease to be such resident voters and freeholders, and vacancies in said board shall be filled by appointment of said judges for the unexpired terms. Upon the expiration of each four year term, the judges shall appoint a new board. Every appointment shall be made by order filed with the clerk of court. Every appointee who shall neglect to file with the clerk within thirty days a written acceptance and oath of office shall be deemed to have declined such appointment, and his place shall be filled as though he had resigned. The judges shall make such rules with reference to such board, and require such reports, as may appear desirable or necessary.

"*Compensation—Expenses:* The members of such board shall receive no compensation.

"*Proposed Charter—How Framed:*

"*Limit of Bonded Indebtedness:*

"*Regulation of Franchises:*

"*Charter, Not Submitted—Ballots:*

"*How Adopted—Judicial Notice:*

"*Amendments:*

"*Alternative Proposals:*

"*Succession—Subsisting Rights:*"

The number of cement sidewalks put in the past year was simply surprising, and now we have many miles of them. The people are also learning that it is not necessary to wait until spring to clean up their grounds. They are doing it now, taking advantage of the pleasant days of fall. It is a slow process of education to convince lot owners that it is not good policy to burn leaves and clippings from the lawn; they should be utilized for fertilizing the lawn.

We feel a great interest in the health of our city. We confer with the health officer and find out what we can do to aid him in his work. We have found that in his official capacity we can have unpleasant cases followed up without arousing unnecessary antagonism. We were fortunate in securing the state tuberculosis exhibit. Some of our

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committee objected to the lugubrious title, but the chairman of the local board of health assured us that there was nothing unpleasant about it except the name, which we found to be the case. The exhibit of practical methods for restoring health, not alone of consumptive patients but really for all diseases, was certainly educational, and much stress was placed upon an unlimited amount of fresh air, a reasonable amount of pure food, plenty of exercise, a clear conscience and an untroubled mind as the bases for good health and happiness. All of the meetings held during the three days were free to the public and were well attended. The expense was comparatively small, and the meetings were of great benefit to the town.

We were able to secure some first-class entertainments that were a rest from the programs given by the ordinary traveling concerns that fall to the lot of a small place.

We succeeded in driving from the sidewalks, and out of the streets, unpleasant displays of boxes, barrels, old wagons, agricultural implements of all kinds and in all stages of disintegration. The policy of the past had been, if there was no immediate use for a wornout article to put it in the street. We and the health officers made it uncomfortable for the owners of rubbish and manure piles. A few meetings of the street committee gave us a list of the unsightly places, and then mention of these was made in the papers without giving the names of owners. The majority took the hint.

The lake shore about the harbor was well cleaned up, bare places grassed over, boathouses painted, and a general appearance of thrift prevailed, showing that the improvement spirit was working and that all were combining for the general good.

In October, 1909, the Minnesota State Federation of Clubs will hold its annual meeting at Lake City, and I can already see the great impetus this will give to civic house-cleaning next spring and summer. Woe to the careless lot owner, for his life will not be worth living!

Our band boys, who are always so generous with their music on all occasions, are very desirous of having a band stand near the park. They have earned some money toward getting one, and rather than have them put up an inferior building we will put in some of our money and secure a good steel one that will be durable as well as ornamental.

We lose no opportunity for earning money. All young people, and some older ones, enjoy dancing. A series of club parties, the net proceeds to go towards improvement work, will probably give us about $200 to turn over to the Park Board. The improvement club controls the hours, 8:00 to 12:00 p. m., and are on hand to receive and to speed

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the dancers on their way home at closing hours, and incidentally our band boys reap a much needed benefit.

We always make it a point to have money on hand to meet an unexpected emergency. It is much easier to make bargains with the money in the pocketbook than to get the work done and then try to earn it afterwards.

We have a great problem before us, and that is, to reclaim and beautify our lake front. It is quite a large proposition, as the inroads of ice and high water demand much expensive planning and work. Temporary measures will not suffice, for the Father of Waters covertly smiles at all such, knowing that in his mighty effort to dispose of the vast amount of surplus water poured into his bosom, it necessitates his crowding his sides to the limit, and where they are weak they will certainly give way; but a little firm restraint and guidance, and all is well, and he is our friend.

As an organization our improvement league feels like passing the word along to all other places whose conditions need bettering. Our enthusiasm increases year by year. If we had been told four years ago that we would be in existence now, and a list made of what would be accomplished directly and indirectly through our efforts, we certainly would have thought that fun was being made of us and our work.

Last summer we were invited to be present at the awarding of prizes for the best kept lawns in the town of Pepin, situated on the Wisconsin side of our lake, and we are gratified to learn that the impetus for their effort was furnished by watching the success on our side. As an improvement league we hold ourselves in readiness to correspond with those wishing to start similar societies, simply for the love and interest we have in the work. To quote from a very old writer, "The abstention from works which are necessary and obligatory, and the refraining from works because they are painful and from the dread of annoyance, is unproper." Let us fulfill our duty to humanity, even though at times the work may be painful and strenuous. Let us always keep in mind our object, beautiful and artistic home grounds attractive, clean and healthful cities, towns and villages.

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SPRAYING

Spraying Calendar for Minnesota Fruit Growers.

A. R. KOHLER, ASSISTANT HORTICULTURIST, UNIVERSITY FARM.
ST. ANTHONY PARK.

The spraying calendar which follows has been modeled after and largely taken from that offered by Professors S. A. Beach and E. E. Little, of Iowa State College. Special information in regard to the treatment for the plum curculio was given by Mr. A. G. Ruggles, of this station.

GENERAL TREATMENT FOR THE APPLE.

When to Spray.	What to Spray With and What For.
1. When the green tips of the first leaves burst the buds. May be omitted if insects and scab are not abundant.	Bordeaux mixture for scab, canker and leaf spot diseases with Paris green or other arsenical poison for bud moths, case bearers, tent caterpillars, canker worms and other leaf eating insects.
2. Just before the blossoms open.	Bordeaux mixture for diseases mentioned under 1. Paris green or other arsenical poison for curculio and the insects mentioned under 1. The most important single treatment against the scab.
3. Just after the blossoms fall.	Bordeaux mixture for diseases mentioned under 1. Paris green or other arsenical poison for codling moth, curculio and leaf eating insects. The most important treatment in fighting codling moth!
4. Ten to twenty days after 3.	Bordeaux mixture for scab, bitter rot and other diseases. Paris green or other arsenical poison for codling moth, curculio and leaf eating insects.
5. Late July or early August.	Bordeaux mixture for scab, bitter rot, fly speck, sooty blotch and other diseases. Paris green or other arsenical poison for second brood of codling moth. Important!
Special treatment early spring before buds break.	Lime-sulfur wash for oyster shell scale and other scale insects.

GENERAL TREATMENT FOR CHERRIES.

1. Just before the blossoms open.	Bordeaux mixture for fruit rot.
2. Just after the blossoms fall.	Bordeaux mixture for fruit rot and leaf spot. Arsenate of lead for curculio.
3. Ten to fifteen days later than 2.	Ammoniacal copper carbonate for fruit rot and leaf spot.
4. Just after fruit is picked.	Bordeaux mixture for leaf spot.
5. From 2 to 3 weeks after 4.	Repeat 4.
6. When cherry slugs are first seen on the leaves.	Dust or spray with paris green or other poison.

GENERAL TREATMENT FOR PLUMS.

1. Just before the blossoms open.	Arsenate of lead for curculio. Bordeaux mixture for fruit rot on blossoms.
2. Just after the blossoms fall when the plums are the size of small peas.	Bordeaux mixture for fruit rot and leaf spot. Arsenate of lead for curculio. Important for curculio!

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3. About ten days after 2.	Repeat 2. Important for curculio!
4. Soon after the middle of June.	Repeat 2.
5. Late July or early August.	Ammoniacal copper carbonate soap for fruit rot and leaf spot.
6. On first appearance of insects.	Arsenate of lead for web worms and other leaf eating insects.

GENERAL TREATMENT FOR THE GRAPE.

1. Before the buds open.	Bluestone (1 lb. to 25 gallons of water) for black rot.
2. When the leaves are one-third grown.	Bordeaux mixture for mildews and black rot. Important!
3. Just before the blossoms open.	Repeat 2.
4. Just after the fruit sets.	Repeat 2. Important!
5. 10 to 20 days after 4.	Repeat 2.
6. 10 to 20 days after 5.	Repeat 2.

Ammoniacal copper carbonate may be used instead of Bordeaux mixture where the latter would leave undesirable spots on the fruit; usually after August 1st.

GENERAL TREATMENT FOR CURRANT AND GOOSEBERRY.

1. When "worms" first appear. Bushes require frequent examination to detect first appearance of "worms."	Paris green or other arsenical poison for the "worms." Bordeaux mixture for leaf spot.
2. When fruit is about half grown.	Repeat 1.
3. After fruit is picked.	Bordeaux mixture for leaf spot.
4. About 2 weeks after 3.	Repeat 3.
Special treatment during winter or early spring.	Cut off and burn branches affected with borers.

Sometimes extra applications may be needed between 1 and 2 for the control of "worms." A second brood must also be watched for.

GENERAL TREATMENT FOR STRAWBERRY.

When growth begins and later as often as necessary.	Bordeaux mixture for "rust" or leaf spot.
After picking the fruit.	Cut and burn foliage on windy day.
At first appearance of the leaf roller.	Arsenical poison every week if necessary but not after fruit is half grown.

GENERAL TREATMENT FOR RASPBE RRY, BLACKBERRY AND DEWBERRY.

When orange rust appears. Note.—This disease is easily recognized by the bright orange color on the under side of the leaf. The whole cane looks sickly.	Dig plants at once and burn.
When anthracnose and other cane diseases are doing serious damage.	After leaves drop in fall or in early spring, cut and burn over the whole affected patch.
1. When young shoots are six inches high (in cases not quite so serious as above).	Spray with Bordeaux mixture.
2. 10 to 14 days later.	Repeat 1.
3. 10 to 20 days later.	Repeat 1.
Special treatment in winter or early spring.	Remove and burn canes affected with borers or snowy tree cricket.

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PREPARATION OF SPRAYING MIXTURES.

Bordeaux Mixture.

The usual formula is as follows:

4 lbs. bluestone (copper sulfate)
4 lbs. unslaked fresh lime
50 gallons water

In some cases the above formula has caused injury to the fruit, in which case the bluestone may be reduced to three pounds. To make fifty gallons of Bordeaux mixture, dissolve the required amount of bluestone by hanging it in the top of the water in a wooden or earthenware vessel, containing from three to five gallons of water. Then slake the lime. When ready to mix the two together, pour the bluestone solution into the spraying barrel and dilute it to about thirty-five gallons. Then dilute the slaked lime mixture to about ten gallons and pour it through a strainer into the bluestone solution in the barrel. Then add enough more water to make up the total to fifty gallons.

Where Bordeaux mixture is used on a large scale, stock solutions of the ingredients may be kept on hand, from which the required quantity of each may be taken for making up a barrel of the mixture at any time. The stock solution of bluestone should be kept in wooden or earthenware vessels, since it corrodes the common metal ware. The stock solution of slaked lime should always be thoroughly stirred before the required quantity is taken from it, so as to make sure of getting enough lime.

If there is a deficiency of lime in the Bordeaux mixture it will burn the foliage. A good way to test for this is to dip the point of a knife-blade into the solution for at least a minute. If a substance of the color of copper forms on the blade it is an indication that more lime is needed.

Ammoniacal Carbonate of Copper.

The formula for ammoniacal carbonate of copper is as follows:

6 oz. copper carbonate
3 pints strong ammonia
50 gallons water

Add about two quarts of water to the ammonia and pour it over the copper carbonate until dissolved. Then add enough water to make fifty gallons. It should be made up only as needed or kept in stoppered bottles.

To make the above solution with soap, dilute the ingredients to only forty gallons; then add one pound of soap which has been dissolved in ten gallons of water.

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Paris Green.

Paris green may be used at the rate of one pound to 100 or 150 gallons of water or Bordeaux mixture. If used with water alone, it is a good plan to use one or two pounds of fresh slaked lime with each pound of Paris green. In preparing Paris green it should first be worked up into a thin paste with a small quantity of water before it is mixed with the total quantity. It is better not to use it on plums on account of the danger of burning the foliage.

Arsenate of Lead.

Arsenate of lead is usually obtained in the paste form and may be used at the rate of three pounds to fifty gallons of water or Bordeaux mixture for fruit trees.

Arsenite of Soda.

The Kedzie formula for arsenite of soda is as follows:

1 lb. white arsenic
4 lbs. sal soda
1 gallon water

Boil together until dissolved, usually about fifteen minutes; then store in stoppered bottles until ready to use and label *Poison!* About one quart may be used with fifty gallons of water for fruit trees. Two pounds of fresh slaked lime should be used with each quart of the solution unless it is used with Bordeaux mixture, when no extra lime will be needed. It is dangerous to use this poison on plums because it may burn the foliage.

Spraying Notes.

PROF. F. L. WASHBURN, ST. ANTHONY PARK.

Another year's work in comparing the advantages of liquid and dust spray convinces us more than ever that the dust spray is not to be compared with the liquid spray where water is abundant and the ground level. We took the work up two years ago without prejudice either way, and it was given a most careful trial, and hence we feel convinced that we stand upon safe ground when we choose for our own use the liquid spray.

Considerable work with a mixture of bordeaux and arsenate of lead convinces us further that arsenate of lead is preferable to paris green, whether used alone or in combination. It is extremely persistent, remaining clearly evident on leaves for several weeks and showing traces of arsenic upon chemical analysis at the end of three

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weeks or more of trying weather. We have perfect faith then in relying upon the commercial arsenate of lead for our own work, buying it ready-made. As is generally known, one can buy a bordeaux paste with arsenate of lead mixed in it.

Two years ago a member of the horticultural society asked us to make a test to see whether the San Jose scale would live through our winters, since it has always seemed queer to us that with all the importing of nursery stock that has been going on here for the past ten years, we did not find evidence of this destructive scale in our orchards and nurseries. A year ago last spring, therefore, we prevailed upon some of our entomological friends, living in states where the San Jose scale was injurious, to send us cuttings from trees infested, and before these cuttings arrived we had carefully constructed two cages, securely covered with muslin, to prevent escape of these dangerous pests, and furnished with padlocks. It is unnecessary to say that every precaution was taken to prevent these insects getting out at the time when they move about, which is in the early summer, and a careful watch of the experiment on the trees surrounding it in our experimental garden convinced us that there was not the slightest possible contagion. Young issued from these scales some time after they were obtained, and crawled over the small apple and plum trees which were in the cages referred to, and to which the infested cuttings had been tied. These young scales soon fastened upon the living wood and appeared to flourish. They were carefully examined under the microscope last spring, and found to be alive and kicking in spite of a Minnesota winter, which, however, be it said, was not a severe one. One should note that the only time there is danger of these scales spreading from tree to tree is when they are in the young or larval condition, which is in the early summer. As soon as they are fastened to the tree there is no danger whatever of their migration; hence in the winter time we took off the top of these cages to allow snow to have access to the trees. The trees in one cage died during last summer, evidently as a result of the attacks of the numerous scales, and I have brought cuttings to the meeting in envelopes, which I would be very glad to hand to any horticulturist or nurseryman who would like to know just how this pernicious scale looks. Of course, it is better seen with a magnifying glass than with the naked eye. These scales are absolutely dead, having died when the trees died, and can offer no danger to any tree whatever. As I said, I will hand these to any grower in the room who desires to have on hand a sample of this, the worst of all scale insects, for comparison with something he may find at some time upon his trees.

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Mr. F. W. Kimball: Is there any danger of being troubled with the gypsy or brown tailed moth?

Prof. Washburn: I think there is.

Mr. Kimball: Should any action be taken to forestall its introduction?

Prof. Washburn: We have already made one effort in that direction. We tried during the session of the last legislature to get an appropriation of $3,500 for the purpose of having some charts printed showing pictures of the brown tailed and gypsy moths, and sending those charts out to the schools of the state. The measure passed the senate, but through carelessness on my part it failed to pass the house. Friends assured me it was all right in the house. It was referred to the committee on public health. I do not know why it was referred to that committee, but at any rate it did not come before the house.

Mr. Swenson: Will arsenate take the place of the bordeaux mixture?

Prof. Washburn: Not as a fungicide. You can buy prepared bordeaux, which, so far as I know, is a good thing. It occurs to me that it might deteriorate by being left for any length of time. I would use at least three pounds of arsenate of lead to fifty gallons.

Spraying for the Plum Curculio.

PROF. A. G. RUGGLES, ST. ANTHONY PARK.

Ever since spraying has been recognized as a source of protection against injurious insects, more or less attention has been given to spraying for curculio. In the east many fruit growers today feel confident that they can control this pest of the plum with an arsenical spray, while others still adhere to the old method of jarring the trees and catching and destroying the beetles.

As all Minnesota fruit growers know, one of the greatest drawbacks to successful plum growing is the injury caused by the plum curculio. Often we have been told that "the plums set well and then all drop off before time for picking." Upon examination of these fallen plums, 90 per cent at least are commonly found with the curculio mark upon them.

Beside plums, apples are very badly attacked by this insect in Minnesota, and without doubt it is in many sections the chief enemy of the apple. When the fruit trees become large and are placed so closely together, as they are recommended to be in this state, the use of the curculio catcher is often a more laborious method of attack than in eastern and southern orchards.

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More or less successful spraying experiments have been carried on by the Cornell Experiment Station against the curculio on plums, while other stations, such as Missouri and Illinois, have carried on similar experiments against this insect on apples.

In the interest of Minnesota fruit growers, spraying experiments against the plum curculio on plums were begun in 1907 and have been carried on through two seasons. These experiments have been conducted in the plum orchard of the Experiment Station, the use of which was kindly loaned for the purpose by the horticultural division. The plum trees used in the experiment varied in age from five to ten

Curculio catcher—used when jarring the trees.

years, the average tree being capable of bearing a bushel and a half of plums. They were of such varieties as Surprise, Wyant, Cheney, De Soto, Compass-cherry, etc. Although at the beginning of each season sixty or more trees were in the experiment, fruit set well only on some twenty-five trees.

The adult plum curculio is a snout beetle nearly one-fourth of an inch in length. The female beetle inserts her eggs beneath the skin of the fruit, and then, turning around, makes the characteristic crescent-shaped mark on one side of the egg. From the egg hatches a little grub, which feeds on the fruit, eventually causing it to drop. When the grub is full grown it leaves the plum and enters the ground, soon changing into a pupa. Late in the season the pupa changes into the beetle, which passes the winter in protected places.

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In 1908 the adult beetles were not found until May 30th, although observations were begun as early as May 1st. After their first appearance they were observed up to July 12th. It is possible that they were present in small numbers several days before May 30th, so that the actual curculio season extended over a period of six or seven weeks.

In studying the habits of this insect one finds that in the spring it feeds for a time upon the leaves and the young fruit. The theory is, therefore, that if the leaves and young fruit are covered with a poison spray during the time the curculio is at work many beetles will be killed thereby. Plum leaves are very susceptible to burning from paris green, but we find that arsenate of lead, however strong the mixture may be used, has no injurious effect upon the foliage, and at the same time sticks much better than paris green. Consequently our experiments were carried on entirely with arsenate of lead, or a combination of arsenate of lead and bordeaux mixture. This past summer, four weeks after the trees had been sprayed—and during that time there had been many heavy rains—I had three leaves from these trees analyzed by the chemical division of the experiment station, and traces of arsenic were still found, while on trees sprayed with paris green several leaves were analyzed, and not a trace of arsenic could be obtained.

In the season of 1907 arsenate of lead at the rate of three pounds to fifty gallons of water was used. The first spraying was given just as the buds were bursting, namely May 29th; the second spraying was done on June 17th, after the blossoms had fallen and young plums were the size of small peas. The third spraying was on June 24th.

Number of sprayings.	Dates sprayed.	Results.
None (check trees)		53% marketable
2 sprayings	June 17 and June 24	62% marketable
3 sprayings	May 29, June 17 and 24	77% marketable

The common sclerotinia rot of the plum was so destructive in 1907 that in 1908 it was decided to use a fungicide with the arsenate of lead. Consequently, bordeaux mixture (3 lbs. copper sulphate, 4 lbs. lime, 50 gals. water) plus three pounds of arsenate of lead was used.

The spring of 1908 started in very early, and the buds began to swell, some fruit buds showing white by the last of April, and because of this the first spraying was done as early as May 2nd. A cold period following this, the second spraying was delayed until May

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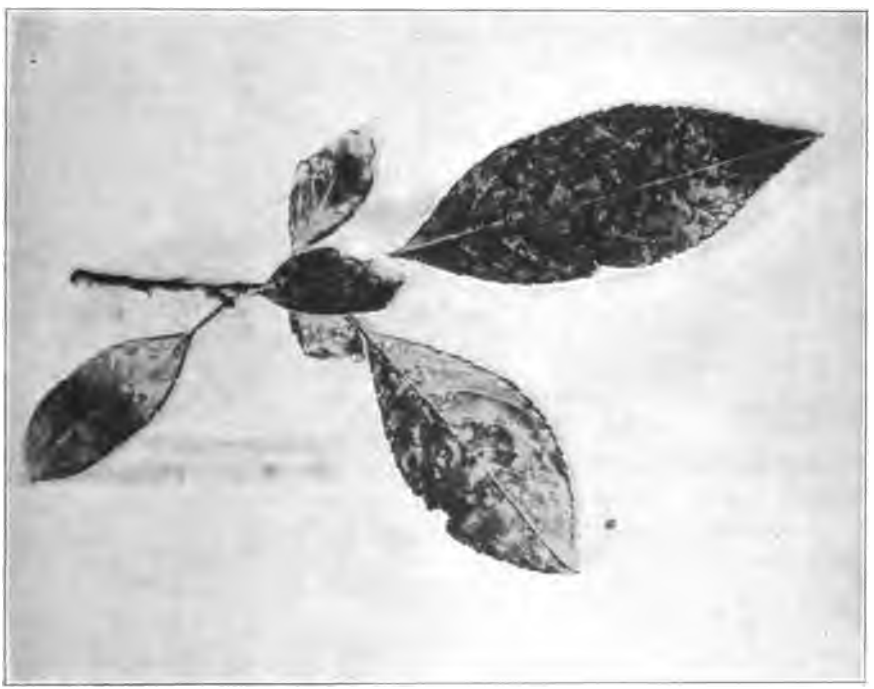
27th. The trees were sprayed the third time on June 4th. The results are as follows:

Number of sprayings.	When sprayed.	Percentage of marketable fruit.
Unsprayed		40 %
2 sprayings	May 2, May 27	62 %
2 sprayings	May 27, June 4	74 %
3 sprayings	May 2, May 27, June 4	86.4%

In the comparison of these tables it is interesting to observe that the first spraying in both years gave results in favor of the early spraying.



Sprig of plum leaves—showing how well the arsenate of lead sticks.

In testing for the presence of curculios it was very interesting to note the proportion of beetles found on the sprayed and unsprayed trees. For instance: On June 10th, jarring one unsprayed tree we obtained eight curculios, while upon jarring three sprayed trees none were obtained. On July 2nd upon jarring three unsprayed trees three curculios were found, and from the same number of sprayed trees none were found. From July 2nd to July 12th trees were shaken every day, and not a curculio was obtained from a sprayed tree, although at least one a day was taken from a check tree.

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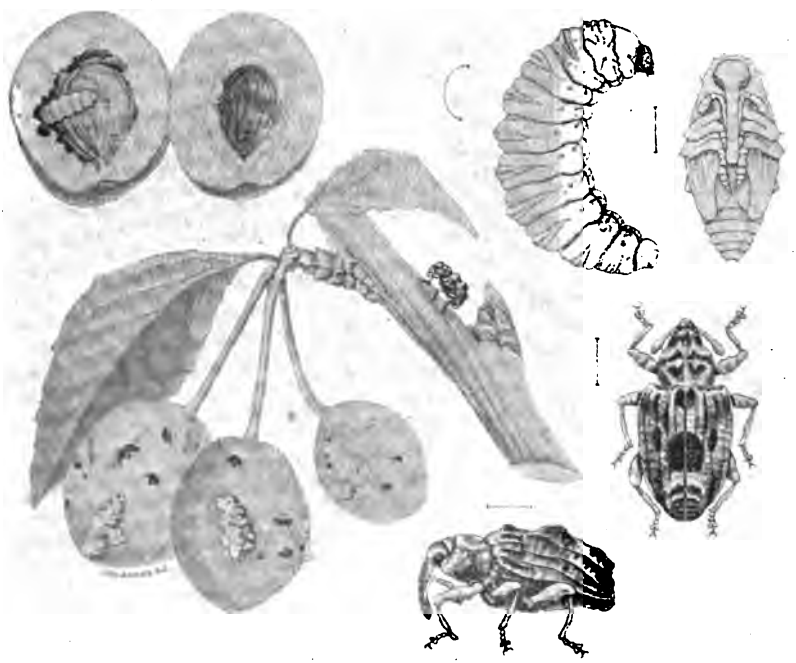
In 1907 the plum crop at the experiment station was practically a failure, while in 1908, although below normal, it was much better than in the previous year. The results for 1908 are, therefore, more reliable for basing conclusions upon.

On the basis of a normal crop of 50,000 bushels of plums in Minnesota, or say $100,000 worth, if every fruit grower would spray, instead of there being only forty per cent of marketable fruit, there would be, to be conservative, twice that, or 100,000 bushels, an ad-



The plum curculio and the puncture it makes.

dition of $100.000 more to be divided among the fruit growers of the state. It must be remembered in this connection that the bordeaux mixture reduced the loss from plum rot and other fungous diseases.

From careful data collected I find that the cost of the three sprayings on such plum trees as were used in this experiment is between ten and fifteen cents per tree. If a tree bore only a bushel of plums, the extra quality of the fruit, as well as the lessening of the dead loss from fallen fruit due to spraying, would more than repay the fifteen-cent outlay.

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The cost of spraying is insignificant in comparison with the cost of jarring. During the first part of the curculio season the trees should be jarred at least every other day for the first three weeks, and after that every three or four days for a week. This entails an enormous expense of time and labor, while in spraying the work of protection is all done in, at the most, three applications of the spray.

Among other methods of control may be mentioned the destruction of windfalls, either by means of cultivation during the latter part of July and August or by turning hogs into the orchard during this period to control this insect; chickens being allowed free run in a plum orchard will also prove effective to a large extent.

We may sum up as follows:

1. Spraying plum trees with arsenate of lead and bordeaux mixture (3-4-50) two or three times at beginning of curculio season, at intervals of a week or ten days, will prevent at least 50 per cent loss of fruit from curculio injury, to which must be added whatever injury from fungi is saved by the use of the bordeaux mixture.

2. Spraying apple trees at the same time will, as our experiments and the experiments of others show, control not only the curculio on the apple but the codling moth as well.

3. The spraying before the blossoms are open gives a result decidedly in favor of such spraying. If, however, only two sprayings can be given, the second, May 27th (in 1908), and third, June 4th (in 1908), are the most effective.

4. Cultivation during July and August (or turning hogs in to gather up windfalls) is an effective method of control.

Mr. F. W. Kimball: What benefit do you get by spraying before the buds open in the spring?

Prof. Ruggles: The young curculio when they begin to be active in the spring feed upon young buds, leaves and fruit buds, and by spraying early a great many are destroyed.

Mr. Kimball: I thought you did not find them until the blossoms were open.

Prof. Ruggles: I said that possibly they might not be present; I am not absolutely sure of that. According to experiments I made, that was the reason for that early spraying.

Mr. C. L. Richardson (Wis.): In the evolution of the curculio I understand a certain stage of their existence is passed in the ground?

Prof. Ruggles: Yes.

Mr. Richardson: If you had an orchard that was infested with curculio, and you were to attempt to clean them out, would not good and thorough cultivation of that orchard bring the immature insects to the surface of the ground and would not the exposure to the sunshine destroy them?

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Prof. Ruggles: It might destroy some, but it would still leave a great many in the soil.

Mr. Richardson: I understand sunshine is death to them?

Prof. Ruggles: I think birds, chickens or anything else would be better than sunshine.

Mr. Richardson: Then clean cultivation would help a great deal?

Prof. Ruggles: Yes, it would help to a considerable extent.

Mr. H. L. Crane: How late do they work?

Prof. Ruggles: July 19th we have found them.

Mr. Crane: Does bordeaux mixture affect the foliage?

Prof. Ruggles: It does if it is too strong.

Mr. Kellogg (Wis.): No danger of using it too strong before the buds and foliage open.

Prof. Ruggles: When they first began to use bordeaux mixture they used it in paste form, and it was extremely strong. In this country the use of bordeaux mixture has developed more rapidly than it has in the old country, until now we have it way down.

Mr. Sahler: How long can it be mixed before it is used?

Prof. Ruggles: I should not mix it before the day it is to be used. It is not bordeaux mixture until you get a mixture of copper sulphate and lime.

Mr. Crane: Would four sprayings pay?

Prof. Ruggles: It might, although the curculio had stopped their work at the experiment station. I took some leaves and examined them and still found some arsenic present on the leaves, so that if arsenate of lead is used perhaps it is not necessary.

The President: How about the apple curculio?

Prof. Ruggles: I think it would be unnecessary, although I have not experimented. In our state it is the plum curculio that does the harm.

Mr. Steller: When would you prefer to spray last?

Prof. Ruggles: At the time the plums are about the size of small peas.

The President: Have you sprayed plums at all?

Mr. Steller: Yes, I sprayed the plums just the same as apples last spring with good results.

Prof. Ruggles: If you use arsenate with lime, it is best to use arsenate of lead.

The President: What is the relative expense?

Prof. Ruggles: Arsenate of lime is made the same or cheaper.

Mr. Steller: In one orchard where the plums were sprayed heavy they had a good crop.

Mr. Lyman: Mr. Steller refers to our orchard, and the trees certainly did well. I think there is a great deal in what Prof. Ruggles is telling us.

Mr. Pabody: I sprayed three times and our plum trees were loaded.

The President: You believe in it, then?

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Mr. Pabody: It was my first experience. Would not the trunk of the tree harbor them?

The President: The only preventative is to put on a deterrent mixture; a good coat of coal oil will prevent the females from laying their eggs.

Mr. Pabody: They stay around the tree in the winter?

The President: Yes, they live over.

Prof. Washburn: You sometimes get ahead of them by pruning after the female lays her eggs. If you put something on the tree in the way of a wash, carbolic acid or something of that kind, it will deter the female from laying her eggs. Clean cultivation means a whole lot to get rid of the trouble.

Mr. Elliot: What time in the season do they lay their eggs?

Prof. Washburn: Late in the summer, the latter part of the summer.

Mr. Benjamin: Will spraying prevent those little insects from getting into the plum?

Prof. Ruggles: That spotting is a fungous disease. Bordeaux mixture ought to take part of it. I am not sure of it before the bud is open.

The President: They also spray with sulphate of copper solution?

Prof. Ruggles: Yes.

The President: Two or three pounds to fifty gallons of water. They are destroyed by the application of a strong fungicide before the buds open in the spring.

Mr. Benjamin: I find a little insect in there if I open the bud.

Mr. Beebe: I want to ask about the Oregon wash and whether it will control the diseases this gentleman has just spoken of?

Prof. Ruggles: I have read about what has been done at other stations; it is the best fungicide.

Mr. Beebe: We plan to use it in our orchard.

Prof. Ruggles: It is the best scale fungicide we have.

Mr. J. S. Hughes (Wash.): We use it in Washington altogether.

The President: Is there anything that will kill plum aphis?

Mr. Pabody: Yes, kerosene emulsion will kill aphis.

Prof. Ruggles: It is not good to recommend; it will burn the leaves when they are young.

The President: What would you use?

Prof. Ruggles: Whale oil soap.

Mr. Kellogg: I sprayed several times and did not get ahead of the curculio and the codling moth. I don't think paris green is good for anything. I got arsenate of lead from Illinois.

The President: Are you sure there was any arsenic in it? (Laughter.)

Mr. Kellogg: I expect to get fooled again.

The President: Is there any test you can make?

Prof. Ruggles: Arsenate of lead is hard to get pure unless you buy it of the best firm. There are two or three firms that handle it in this city.

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Mr. Kellogg: Is there any danger of killing the leaf?

Prof. Ruggles: I think so if you get your bordeaux too strong.

Mr. Busse: I would like to ask the professor whether he does not think the curculio that works on the apple is the same that works on the plum?

Prof. Ruggles: In this state it is the plum curculio and not the apple curculio that does the most damage.

Mr. Busse: When I use it the first and second time I use it much stronger, and the third time if you use lime with it you can make it weaker, and it will not damage the foliage.

Prof. Ruggles: On apples or plums?

Mr. Busse: Either.

Prof. Ruggles: I would use it 5-6 on apples.

Mr. Busse: It is modified by putting in more lime?

The President: It is not so likely to burn the foliage.

Prof. Washburn: Whale oil soap is not whale oil soap; it is fish oil soap. You take common soap—I am not advertising any soap—but Ivory soap, say a five cent cake, dissolved in water, will extirpate the lice.

Mr. Gust Johnson: I would like to ask whether you have had any experience with the grape curculio?

Prof. Ruggles: I have had no experience with that.

The President: Did it trouble you, Mr. Johnson?

Mr. Johnson: It did this fall. They would not get ripe, and I found where the grapes were stung.

The President: How does it affect them?

Mr. Johnson: They dry up and die.

The President: Are you sure it is that?

Mr. Johnson: Yes.

Mr. Steller: Do you spray, Mr. Johnson?

Mr. Johnson: Yes, but it comes late in the season, just about the time the grapes begin to get ripe.

Mr. Steller: I only sprayed one side, and we had good grapes.

The President: What did you spray with?

Mr. Steller: Bordeaux mixture. My father did not have a poor grape in the whole vineyard, and he only sprayed once.

Prof. Huston: The question came up about lime with sulphur and whale oil soap. The Michigan people have been very successful with that when they put in a little lime. They made a report on this, and said they had very good results.

Mr. Kohler: I think it would be a good idea to call attention to the fact that this should never be used while the trees are in leaf; it should be used while the tree is dormant, after the leaves drop in the fall or before they come out in the spring.

Prof. Huston: Some of the very best results reported in Michigan were had when the spraying was done after the leaves came out, but very much diluted, just about one-hundredth as strong as in the winter time. Some one reported very good results in using that as a fungicide diluted down to one-tenth.

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The Preparation of Spraying Mixtures.

A. BRACKETT, EXCELSIOR.

Spraying has become necessary in most localities if we expect to raise good crops of fruit and vegetables, and this fact is recognized by all horticulturists. No spraying article, no matter how interesting, could have held the interest of a horticultural meeting for more than fifteen or twenty minutes five years ago, but at the present time it is not unusual for them to devote from one-half to a whole day to the subject of spraying.

There is probably no spray as effective as bordeaux mixture, which was accidentally discovered in France by a party who had grapes growing along the highway and who was bothered by having people helping themselves to them. So to give them the impression that they were poisoned he sprayed them with copper sulphate and lime and was surprised to find that the vines so treated were much healthier than the vines that were not sprayed. This fact was reported to the professors of science in the province of Bordeaux, who tested the preparation and found it was very effective in preventing disease. The United States government commenced to experiment with it in 1886. It is now acknowledged by all to be the most effective remedy for fungous diseases we have.

In the preparation of bordeaux mixture it is essential to use wooden or earthern vessels. Dissolve three pounds of copper sulphate in twenty-five gallons of water. then slake and dissolve three pounds of lime in twenty-five gallons of water. These poured together into a fifty gallon barrel make the proper mixture. If you wish to use more than fifty gallons you can make what is called a stock solution. It is possible to dissolve three pounds of copper sulphate in one gallon of water and this can be dissolved a month or two beforehand if necessary. You can also dissolve and slake three pounds of lime in a gallon of water. So that if you figure on needing twenty-five barrels of spray during the summer, you would dissolve seventy-five pounds of copper sulphate in twenty-five gallons of water, and slake and dissolve seventy-five pounds of lime in twenty-five gallons of water. Then when you need fifty gallons of spray, it would only be necessary to take one gallon of each of the stock solution. But understand, these must be diluted each with twenty-five gallons of water *before pouring them together.*

The demand for spraying material has been so great it has encouraged the manufacturers of many different poisons, including

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twenty-five or thirty different makes of paris green and scores of brands of arsenate of lead, some in powder and some in paste. None are as good as the homemade liquid article, which is made by dissolving twenty ounces lead nitrate in one gallon of cold water, also dissolving separately ten ounces of sodium of arsenite in three quarts of water, both solutions to be made in wooden vessels. Pour the separate solutions into a spray tank containing from one hundred to one hundred fifty gallons of water. A white precipitate of lead immediately forms. This preparation can be used several times stronger without injury to foliage and will stay in suspension much longer than the best commercial preparations and will cost much less. We have also used arsenite of soda to good advantage. It can be made by using one pound of white arsenic and four pounds of sal soda boiled in two gallons of water until the arsenic is thoroughly dissolved. One gallon of this will equal one pound of the best paris green, or would be sufficient poison for one hundred gallons of water or bordeaux mixture.

The President: I am going to call on Mr. Hughes, whom many of you know, to tell us about the orchards he is connected with in Washington.

Mr. John S. Hughes (Wash.): I am in charge of the orchards belonging to the Inland Railroad of Spokane and, of course, in that connection come in touch with this phase of the business. We in Washington have to spray, particularly for apple scab, about which you know, and more particularly for the codling moth. The only phase of the subject upon which I care to touch at all is upon the new method of spraying for codling moth which our experiment station in Washington is carrying out. We follow in a general way the method Mr. Steller has outlined to you, and during the past two years Prof. Melander, of the College of Washington, has been preaching the doctrine of single spraying with arsenate of lead, three pounds to fifty gallons. I notice that every other speaker has indicated a larger proportion than three pounds to fifty gallons, but we have used this with the other mixture, and we find it, as nearly as human judgment can devise it, an absolute specific. We have been in the habit of spraying three or four times. In some of our orchards containing from fifty to one hundred acres the spraying began early and continued during the whole period. During the past two years we reduced the number of sprayings, and Prof. Melander has held that if the first spraying was done at the proper time and the conditions were perfect, there would be no need for future spraying for the codling moth, and we believe the experiment proposed two years ago and carried out since that time has given the desired result. I can cite several instances in proof of this statement. We have about a dozen orchards large and small. We experimented in two of these orchards where in former years we had sprayed two, three or four times, as we deemed necessary, and

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in this experiment we sprayed shortly after the worms appeared and then banded the trees. That is, we put bands around the trees to let us know whether they were in the orchard. Shortly afterward they would spray the orchard again if the indications seemed to make it worth while. If there were few worms, they did not deem it worth while. This season in the two orchards we sprayed but once there was less than two per cent of wormy apples, and in the other instance I think it was a little larger than that. I have a letter from Prof. Melander in which he says he is satisfied that this method is entirely satisfactory. The method has proven entirely successful this year, and we have been able to keep several commercial orchards in the best condition with one spraying. (Applause.)

Mr. Brackett: There is no doubt but one spraying may be sufficient where Mr. Hughes is located, but in the eastern states they receive benefit from three, four, five and even six sprayings. The number of good apples is increased without exception in those states by four, five and even six applications.

Mr. Hughes: What is the use of continually spraying when you know that there are no more worms coming in?

Prof. Washburn: Arsenate of lead is a mighty good thing.

The President: How long did it show a trace on the leaves?

Prof. Ruggles: Four weeks or more.

Mr. Kohler: I was thinking of one application for codling moth. I don't think that would do for Minnesota. If you sprayed and your neighbor did not, there would not be much use in spraying only once.

Mr. Hughes: Prof. Melander says they will fly across the road.

Mr. Kohler: They fly a couple of miles with the wind.

Mr. Hughes: Well, we don't have so much wind. (Laughter.)

Mr. Kohler: In regard to the arsenite of soda. I have not observed its effect much on fruit trees, but I have had considerable experience with its effect on potatoes. I do not know that it is universally that lime be added to the arsenite of soda, but it is often recommended using from one to four pounds per gallon for stock solution, which is for the purpose of preventing injury to the foliage. I find the arsenite of lime burns the foliage more or less on potatoes. In my experience it is not advisable to use the arsenite of lime on potatoes; I would either use the paris green or arsenate of lead.

The President: Prof. Kohler has put a large amount of time and labor into this work.

Prof. Huston: I want to call attention to the fact that a number have spoken of arsenate of soda. You cannot get arsenate of soda, and the term is incorrect; it is arsenite of soda.

Prof. Ruggles: Do you use that alone with water in solution?

Mr. Brackett: Yes, the same as I would use Paris green. In regard to burning leaves, Mr. Steller has used it two years on potatoes, apples and everything else, and I don't think he has ever burned anything.

Mr. Stellar: Yes, I used it.

The President: You used lime?

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Mr. Steller: Yes, I used lime.

Prof. Ruggles: It will burn the foliage every time you don't use lime with it. I used it on sugar beets. Arsenite of soda will burn if you don't use lime with it.

Mr. Brackett: If you use bordeaux mixture there is enough lime in it.

Prof. Kohler: Three years ago I accidentally put a barrel of arsenite of soda on potatoes without adding lime. It burned the foliage where it happened to get on continuously, but where it was put on thin it did not do much harm; the pressure was less where the lime was added, but even then there was some pressure. There are one or two other points that ought to be brought out here in connection with this subject of spraying. One is the thorough agitation of the solution in the spraying barrel or tank, whatever you may use, to keep it thoroughly mixed. For instance, if you use paris green it will settle, and you get a much stronger solution in the last half of your barrel than you do in the first half. Another point is that with high pressure you get the best results from your spraying.

The President: How much should the pressure be?

Prof. Kohler: It should not be less than sixty pounds, and with a power sprayer I would like it about 100 pounds. If you have high pressure it sprays the leaves nicely, and the fine spray comes in contact with every portion of the leaf, but it does not coat the leaf thoroughly where the pressure is low and the material comes out in large particles. So I would say keep up constant agitation and use high pressure in spraying for the best results.

The President: Does the style of nozzle make any difference?

Prof. Kohler: I think the general experience is that the Vermorel nozzle gives the best satisfaction, and as a general thing I would recommend that. I have tried other nozzles, and they are more apt to clog, although when they do work they produce a finer mist. I would recommend the Vermorel nozzle by all means.

The President: What nozzle do you use, Mr. Steller?

Mr. Steller: I use the Excelsior nozzle.

Mr. Hughes: Coarse or fine?

Mr. Steller: On small trees I use the fine.

Mr. Hughes: With arsenate of lead, don't you use the coarse nozzle?

Mr. Steller: Yes, so it drips from the trees.

Mr. Hughes: That fine mist must cover the leaves.

Mr. Steller: Yes.

Prof. Kohler: You can get these Vermorel nozzles of different sizes. If you want a nozzle for paris green or bordeaux mixture you can get it.

Mr. Brackett: If you use paris green or even arsenate of lead for the last spraying it is apt to cause a falling off of the apples; your apples will fall off more. There are varieties that are more apt to fall off, like the Wealthy, so you had better use arsenite of soda for the

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last spraying. In experiments carried on in the east they found that by using paris green they lost a great many more apples by falling off.

Prof. Ruggles: I am afraid that many persons will carry away a wrong idea concerning this insecticide, arsenite of soda, and therefore I think it is of the *greatest importance* that it be made as clear as possible.

The first point I wish to make is that the arsenite of soda as used by Mr. Brackett must *always* be used with lime, or where lime is present, as in bordeaux mixture, otherwise there will be a burning of the foliage.

Second: The best way to use this solution of arsenite of soda is to use it in slaking the lime. Then there would be absolutely no danger of burning, and the resultant mixture would be *arsenite of lime.*

Third: I think the calling of this insecticide "white arsenic" is apt to be very misleading, because many people upon hearing that name will not think enough on how to prepare the mixture, but will use it as "white arsenic," and consequently get a burning of the foliage.

One other point: In reference to *arsenate of lead,* Mr. Brackett says "use it in the liquid form." Arsenate of lead is not soluble in water, and can never be used in a liquid form like *arsenite of soda.* In making arsenate of lead we have a liquid containing much flocculent matter. These suspended particles are the arsenate of lead. The same is true of the *arsenite* of *lime*, the white suspended matter is the part that does the business with the insects.

Does It Pay to Spray.

CARL G. STELLER, EXCELSIOR.

It more than paid for me, and I would not want to raise apples without spraying. About fifteen years ago we started to spray, and we always had a fair crop of apples, and there was not one year that we did not have apples to sell. When we started in spraying, some of our neighbors laughed at us and said they could raise apples as well as we could without spraying, but it was not very long before they came to us and bought apples, because they didn't get any apples of their own, for they did not spray. We started in with a barrel pump, but as we planted more and more trees each year, it gave us more spraying, and that is not a very easy job in summer time, especially when it is good and hot weather. So I said, "I am going to get an engine and let it do the pumping," and I can do it faster, too, as it takes quite a while to do it by hand, and it is hard work to pump all day long. The first year we sprayed two times, using London purple, and we continued using it until about six years ago, when we used the bordeaux mixture, the 5-5-50 solution.

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Five years ago last spring I bought a gasoline engine and a double-acting nozzle spray pump, a low truck and a tank. Then I went at spraying for myself and other people. I would not go back to hand spraying again. I know I sprayed orchards that would never have had any spraying if I did not have my machine to do it with.

I start the first spraying as soon as the buds look as though they would open, which for the last five years have been from the first of May to the fifth. Then I spray every ten days after that, sometimes four or five times, just as many times as people want to spray.

I find that the last two or three years that we have to spray about

Bringing in the harvest.
Mr. Carl G. Steller and family.

every ten days if we want good apples. I noticed this year that the curculio did more damage to the apples in one week from May 30 to June 7 than I ever saw done in one summer. I use the bordeaux mixture and white arsenic, which I think is a good deal better than paris green. I also used arsenate of lead at one place, and I think it sticks better than the white arsenic—at least it did on us that handled it, for it was a hard job to get it off our hands and faces.

Now, I have heard and read a good deal about that fine mist spray. I think that would be all right on a level place where a man

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can use a tower, but in our part of the country, where it is so hilly you can not tell whether any moment your low wagon will go over, a tower would be all out of the question. Another thing, the trees are planted too near together. Sometimes I have to get under the wagon in order to get through between the rows. I always use a good stream and get the trees pretty wet, so it starts to drip from them.

One thing I think most all of us make a mistake in, and that is, we plant our trees too close together. If I ever plant another orchard I will put the trees about eighteen to twenty, even twenty-four, feet apart, so I can drive up and down on each side of the row. That is the only way to do it right. I find that we have to be very careful to

Mr. Carl G. Steller's spraying apparatus.

get every apple sprayed, for if we miss one it will be all stung up. Another thing is to keep the dry wood and old brush out of an orchard. If you don't you just keep breeding the insects faster than you can destroy them.

One thing I found the last two years, and that is, we've got to do late spraying, about the first of August. The last two years we lost more of our late apples from getting stung after the first of August than before that. I went through our orchard in the last part of September, and I never saw the apple curculios so thick as they

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were there on some Hibernal apples. I think that is the hardest insect to fight as it does so much damage in a short time.

Mr. A. B. Lyman: I live in the same neighborhood with Mr. Steller, and I do not know how profitable it has been to him, but I know his work has been worth hundreds of dollars to the fruit growers in the vicinity of Excelsior. He has done the spraying for the entire neighborhood. I believe some one in every community where apples and other fruits are grown ought to become an expert in spraying. We are all liable to use bordeaux mixture too strong. We used it 6-6-50, but I don't think now I would use it over 3-3; I think that will make a good mixture.

The President: Now, this is a very important subject and one that we are all interested in. We want to discuss this a little more fully. What do you charge them, Mr. Steller, by the job or by the day, or how do you charge them?

Mr. Steller: In some cases where they have not enough I charge by the day, but I generally charge so much a tank. It depends on the size of the trees how much a tank covers. It covers all the way from one hundred up. Say six or eight-year-old trees, I think it will cover from two hundred and fifty to three hundred.

Mr. Lyman: We have about thirty acres to spray, and we go over that in seven hours.

The President: The trees are of good size?

Mr. Lyman: Yes, they are big trees.

The President: What do you pay?

Mr. Lyman: $3.50 a tank.

The President: Have you tried arsenate of lead?

Mr. Steller: I tried a little this fall.

The President: What is your impression?

Mr. Steller: I think it is a good thing; it sticks better than what we have been using.

Mr. James Harrison: I would like to say that Mr. Steller has convinced me of the value of spraying. I formerly opposed spraying and did not spray until two years ago. I found my Hibernal were worthless, and I finally concluded to have Mr. Steller spray for me, which he did two years ago. I have some four or five hundred trees, and the spraying for that orchard cost only seven dollars. Two years ago I sold $700 worth of apples from that orchard. The apples from the trees that were sprayed were very fine; they were not spotted. The apples from trees that were unsprayed were poor and spotted. I have made up my mind that I will never let my orchard go without spraying.

The President: Do you make a test of your mixture before you spray?

Mr. Steller: I generally do with a knife.

Mr. C. E. Swenson: Do you use a knapsack for a side-hill?

Mr. Steller: Yes, we have a knapsack sprayer that we used fifteen years, perhaps longer, and it is good yet. There are a good many that are good.

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Mr. James: They have force enough if you have strength enough to carry one.

The President: How many horsepower is your engine?

Mr. Steller: Three horsepower.

The President: What is the cost of it?

Mr. Steller: It will cost $200 if you put in an outfit.

Is the Apple Industry in the United States on the Decline?

HON. G. B. BRACKETT, U. S. POMOLOGIST, WASHINGTON, D. C.

From the information obtained through correspondence and the census reports it is evident that the acreage of apple orchard plantings is annually increasing at a moderate rate, but the returns from the plantings do not always show the same ratio of increase. The apple crops for the years 1907 and 1908 were not anything like so large throughout the United States as the crop for 1906, as will be seen by the statistics given by the New England Homestead in October, 1908, and yet apple orchard plantings increased at the rate of nearly 1,000,000 trees per annum in some states—but of this large number few have as yet come to the bearing age, and hence the results do not yet appear.

An increased acreage resulting in a decreased yield of fruit in any one season or for several seasons does not necessarily mean a decline of the industry. Many factors enter into the problem of profitable returns. Orchards may be unkept, unfertilized, unsprayed or uncultivated—all such neglects tend to decimate the fruit yield.

What does it profit a man to grow an orchard if he does not intend to cultivate it? Apple trees will not take care of themselves any better than any other business enterprise will stand neglect.

Oregon apples today are selling in eastern cities for five cents apiece when much of the local grown product can hardly find a market at any price. Why? The Oregon orchardist turns his whole attention to the growing of perfect fruit, and by carefully picking, grading and packing he puts his fruit on the market in such perfect condition that he can command the highest prices for his fruit, and the public willingly pays for it.

The fruit grower of today must be aggressive. Eternal vigilance is the price of successful fruit growing. The man that sits idly down, and expects his orchard to take care of itself, cannot expect it to yield a bountiful crop of beautiful fruit. "Feed your trees and your trees will feed you" is a sound business maxim. A large share of the de-

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crease of the apple crop of late is probably due to the increase of fungous diseases and insect pests. Millions of dollars in damages annually are the results of neglect to combat these obstacles to successful fruit growing.

Selection of varieties unsuited to soil and climatic conditions is another prolific source of loss. An apple orchard takes six or seven years to come into bearing, and it is pathetic to see time and money spent on varieties poorly adapted to soil and climatic conditions. The best apple for a man to grow in any given section is the variety known to succeed best there. Because a man knew and liked a Baldwin apple in Maine is no reason to believe that he will make a commercial success of the variety in Texas.

Lack of care in the cultivation of trees is another thing that cuts down profits. In order to provide the feeding rootlets with the great amount of water that is to make up a great crop of fruit, shallow and continuous cultivation must be maintained in the orchard from March until July.

The wholesale devastation of orchard trees, amounting to $1,000,000 annually, as estimated by some entomologists, has also brought about the fear that orchard areas are decreasing. Codling moth and bitter rot and kindred ills have also disheartened a number of fruit growers. But there are stout hearted orchardists to whom "every knock is a boost" and who do not flinch at every table of fruit statistics shown them. To these fruit growers who have properly sprayed and properly cared for their orchards, prices received are far in advance of those received in former seasons.

Much loss has been entailed during the last three years owing to the peculiarity of the season—late frosts and cold rains during the blooming period, excessive floods and long continued drouth, resulting in great losses to the apple grower.

The year of 1908 was an exceedingly trying one for the fruit grower. The excessive and long continued drouth, coupled with high temperature, ripened the fruit prematurely and so weakened the fruit on the trees that the drop was excessive. On account of these unusual climatic conditions the eastern orchardists were forced to gather their crop at an unseasonably early date. Apple prices fortunately ruled much higher than for 1907, but the frenzied wholesale buying of 1907 was not repeated because many buyers a year ago overstocked and lost heavily. The demand for good fruit is steady and wholesome, and the prices are running from $3 to $5 per barrel.

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While it is probably true that the planting of commercial orchards in the middle west, especially in Indiana, Illinois and Iowa and other sections, has been on the decline during the past few years, it has been more than overbalanced by the increase in the east, and vastly more so in the extreme northwestern states of Oregon, Washington and Idaho, where the planting of trees is going on at a tremendous rate. In some sections they are practically doubling their acreage annually.

The state of Washington had within its borders at the close of 1907 approximately 5,337,094 apple trees. Yakima County headed the list with 1,795,689 trees; Pierce County made excellent gains, having 23,149; while Stevens County shows an increase of 97,760 trees, or 150 per cent, over the year before. Okanogan County added 52,635 trees to the 32,475 in bearing last year. More than half a million apple trees came into bearing in Yakima County last year. Mr. F. A. Huntley, State Horticultural Commissioner, stated last June that it was expected that more than 1,000,000 trees would be set out before the end of the year.

With a view to obtaining the latest data possible a circular letter was sent to many leading representative nurserymen in the country with the result that less than 10 per cent of the number report a decrease in sales of apple trees, and in most cases the cause is due more to local features than to general lack of demand. On account of the lateness in sending out these letters, returns have not yet been received from the far west, where the increase has been the greatest.

I quote from letters received from a few of the leading nurserymen in order to judge of the industry at first hands:

One of the largest growers of apple trees reports: "Sales have increased at least 50 per cent in apple trees during the past ten years."

Another, known all over the middle west writes: "Our sales of fruit trees, principally apples, have increased from 300 to 500 per cent in the last decade."

A southern nurseryman whose name has become almost a household word among fruit growers writes: "There has been a large increase in the production of nursery stock during the past ten years in this vicinity, and the demand keeps full pace with the supply."

A well known eastern nursery firm writes: "We used to plant about 125,000 apple trees each season, now we plant 225,000 to 300,000 every year. The increase is nearly in the same proportion in other fruits."

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Another eastern nurseryman writes: "Our orders are small, seemingly growing smaller, not averaging over $5.00 each, but there are more orders as regards numbers. We note one-third more orders this season. The demand is good and steady." This phase of the nursery business may be true in many instances. As the land steadily becomes settled with smaller homesteads the orchard acreage for the individuals becomes smaller, but there are a greater number of individuals engaging in the industry than formerly, and men are daily seeing the importance of not undertaking more than they can successfully and profitably handle, and results are apt to be more gratifying.

Another nursery firm writes: "There is only one answer to this question. The sales of fruit trees have steadily increased and to such an extent within the last three or four years as to almost double the wholesale price."

Another firm whose sales are chiefly of apple and pear trees said: "We have not kept any tabulated figures, but we know that our sales have increased in the last decade."

A well-known nurseryman from the middle west writes: "Our sales have decreased materially. Many nurseries have gone out of existence. The result is to be seen in the country homes all around us, and the lack of adornments and comforts from a horticultural viewpoint cannot help but be one of the pertinent factors in why the boy does not stay on the farm." This is in a grain producing section where more attention has been paid to the growing of grain for the wholesale market than to the growing of fruit for even home consumption. It is a sad thing when the farm home is not adorned by beautiful, thrifty fruit orchards.

Another nurseryman from an entirely different section writes: "My sales have increased in the last year about 50 per cent, as near as I can tell, and the outlook for the spring is very promising."

A nurseryman west of the Mississippi writes: "The sales are more than twice as much as they were a decade ago. I am in a rapidly growing community where there are a great many new places being improved, which calls for fruit trees. I believe there is a decided increase in the fruit industry the country over."

And thus it is from day to day these reports come to my desk and bring their encouraging messages. Business depression for the past year or so seems not to have injured the sale of apple trees nearly so much as it closed up other avenues of trade.

Another very extensive grower of fruit trees writes: "Our sales of fruit trees have gradually increased during the past decade. We how-

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however note that the fruit industry in one section will either lag or die out, but increase in another. New sections are continually appearing."

Another well known nurseryman writes: "My business has increased from year to year. Beginning about ten years ago on about ten acres of leased land, the first year's business amounted to about $2,000 wholesale, and since that time it has grown until my annual sales run about $35,000 wholesale."

According to the last census, Missouri was the greatest apple growing state in point of acreage planted, which held 20,040,399 trees, but the acreage has increased markedly during the past ten years. New York was a close second with 15,054,832 trees, and yet taken year for year the New York apple crop will yield better returns than that from Missouri, because the orchards receive relatively more attention.

California in 1907 marketed 396 carloads more of apples than in 1906 and will probably exceed these figures in 1908.

The big apple show at Spokane and the one at Council Bluffs, where one of the greatest industries yielding the biggest resources of the northwest will be exploited, will do much to stimulate fruit growing in the great northwest.

Large acreages now planted to apples are not yet in bearing. When these come into market the profit side of the ledger will be much better looking.

There is also a great deal of new territory being continually opened up, and new railroads are carrying the apple industry to the uttermost recesses of these sections. Thousands of letters reach this office annually in regard to orchards, best varieties for the various sections and suited to commercial and private plantings. The fierce compepetition in business pursuits drives many men into the more peaceful occupation of fruit-growing. The apple orchard, whether a commercial or private enterprise, is a paying industry if rightly managed.

The demand for furit, especially apples, is constantly increasing, It is no longer considered simply a luxury, but it is now classed as one of the most healthful foods. The demand for the product is greater than the supply, and as long as perfect fruit can be sold for $3 per bushel, as it is now selling in car lots, there is no danger of overproduction if the crop is properly distributed. There are good and bad years in the history of the apple industry, but we have watched the business carefully for a number of years, and facts and figures prove beyond a question of doubt that the industry is increasing rapidly. When the orchards of the Northwest are yielding an annual income of from $500 to $1,000 per acre, it is not likely that the industry will be allowed to decline.

The apple is justly called "The King of Fruits", and its mighty empire is being annually increased, and the treasury of that kingdom will compare favorably with the returns from any of the other channels of trade.

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SECRETARY'S CORNER

LATE SPRAYING.—Mr. A. Brackett, of Excelsior, says "In using arsenate of soda or paris green on late spraying, it is very apt to make the fruit fall badly. Arsenate of lead would be much better for late spraying."

PRESENT MEMBERSHIP.—Up to date of writing, March 23rd, the annual membership roll of this society stands at 2436, which is 237 more than a year ago at the same date. How much have you contributed towards this material increase in the membership roll? Since the announcement in the March number, there have been two names added to the life membership roll, Mr. K. K. Peterson, of Rothsay; and Geo. Noren, Chisago City.

CORRECTION AS TO SURPRISE PLUM.—Mr. Anton Wilwerding, of Freeport, contrary to the general experience last year, had excellent success in the fruitage of his Surprise plum. Consequently an error in his late report as vice-president which makes him say that the Surprise trees had the least plums is very much out of the way. The sentence should have read "The Surprise trees had the least aphis and Wolf (freestone) the most of all."

MORE REPORTS ASKED FOR.—The bill in the legislature asking for the printing of more reports for this society is now, as we understand it, in the hands of the sub-appropriation committee, a joint committee of the two houses of the legislature. Have you written to the members of the legislature from your district in favor of the passage of this legislation?—if not, a word on a postal would be sufficient for the purpose, and we are very desirous that many members of the legislature should hear from their constituents directly in this matter. Please refer to the bill as Senate file 300 or House file 484, depending upon whether you are addressing a member of the senate or of the house.

TREES INJURED BY MICE OR RABBITS.—Many reports are coming in of injury to fruit trees from the depredations of rabbits or mice, probably on account largely of the deep snows of the winter. Trees partially girdled by mice can often be saved by banking up around them with earth, thus excluding the air. If the girdling is too high up for this or extends around the tree, the tree can often be saved by inserting grafts both above and below the girdled portion, cutting a slit into the bark both above and below in which the end of the graft is inserted. A number of these grafts should be put in and grafting wax used in the usual way to insure their growth. On page 80 to 83 of Prof. Green's "Amateur Fruit Growing" will be found fuller directions for this method of saving injured trees. If you have not a copy it can be secured from this office for 50 cents, or it would be given you as a premium for securing a new member for this society. Comparatively young trees that have had the branches all cut off by rabbits can be saved by cutting off the trunk of the tree below the point where the branches have been eaten off and allowing a new top to come out. Usually a good many sprouts will start to grow, but only three or four should be left, selecting those that will result in a well balanced top, and rubbing off the others as fast as they appear. Trees forming a new head in this way if started near the ground will often make more valuable bearing trees than as originally grown.

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Mr. Chas. G. Patten on the lawn at Mr. Clarence Wedge's residence.
Two Colorado blue spruce in the picture.

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THE MINNESOTA HORTICULTURIST

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Evergreens.

AN EXERCISE LED BY CLARENCE WEDGE, NURSERYMAN, ALBERT LEA, MINN.

You will see I have brought with me quite a number of evergreens. They are all varieties taken from the seed bed and transplanted. They are not selected specimens at all, but they are rather taken with the idea of getting typical specimens showing the manner of growth.

Here we have a jack pine (indicating), which you will notice has a little larger growth than the Scotch pine. It is the usual difference in their growth at the same age. I do not know of anything in the evergreen line that will grow as fast as the jack pine. Here we have a Scotch pine (indicating). Here we have a dwarf mountain pine (indicating), which has a dense mass of foliage. It is one of the hardiest things we have, slow growing, and especially valuable to plant around the house where other evergreens soon become too large. It is a great mistake to plant the average evergreen too close to or in front of the house. In riding out with my wife two weeks ago we passed place after place where a lot of evergreens were planted right in front of the house, the last place where they should be. Evergreens serve best as a background or a windbreak, and are especially pleasing when grouped at the sides of the house.

Mr. Underwood: As to the jack pine and the Scotch pine, are the trees any good when they become old?

Mr. Wedge: The jack pine is hardly to be classed as an ornamental tree at any age. As a windbreak tree it grows very quickly and makes a good account of itself in severe locations and dry, gravelly soils.

Mr. C. S. Harrison (Neb.): As a forest tree it is hard to beat.

Mr. Underwood: Do they hold their branches?

Mr. Wedge: Not as well as the spruces. It varies as much in its style and habit of growth as the different kinds of corn. I have just come from Carleton College, where I have been looking over the grounds, and I find they have some trees of the Scotch pine, perhaps thirty years or more old, that are fine types of the Scotch pine. They are very straight and handsome trees. You can get strains of seed that will give trees as straight and handsome as anything you can find,

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a very fine timber tree, but unfortunately the greater part of the seed of all forest trees is gathered from dwarfed, scrubby specimens, because it can be gathered more easily and more cheaply.

Dr. H. M. Speechly (Man.): The Scotch pine is growing very finely in Manitoba.

Mr. Wedge: Mr. Underwood would no doubt like to tell you that the spruce is a much better tree for a windbreak because it holds its lower branches better.

Mr. Underwood: The Scotch pine is very good as a tree, but it does not hold its branches well.

Mr. Wedge: It is true that these trees will lose their lower branches and become ragged below in time. When I am advising the planting of a windbreak, I generally advise leaving room to plant white

Scotch pine hedge on farm of A. K. Rush, at Dover, Minn.

spruce inside as a sort of lower lining. As a rule the Scotch pine is a much cheaper tree, grows much faster at the start, and people will buy it more readily.

Mr. Underwood: If I were going to plant a windbreak I would rather plant a tree that would be a good tree when it was thirty-five years old, when I would expect that it would really make a windbreak. I would not want a tree that would lose its branches at that time. I think it would be a disappointment to grow a tree twenty-five years and then find it a failure. I think it is best not to plant it at all.

Mr. C. S. Harrison: There are not many trees that will hold their branches twenty-five years unless they stand out in the open and have a chance to spread.

Mr. Underwood: We have a hedge of white pine and spruce and are keeping them cut back in their lower branches, and in that way they are very satisfactory. The Scotch pine is just the contrary. I

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asked for information. I want to know how it does with other people. I do not say because they are not successful with me as a windbreak that therefore they ought to be discarded, but if that is generally the case I would like to know it.

Mr. Brackett: Is the white pine a success in all parts of the state? It is in some localities.

Mr. Wedge: Not as a windbreak generally. As I have seen the white pine at Mr. Underwood's place I would plant it as soon as any other. I consider it about the noblest tree on earth. But it is almost impossible to grow it in the open at Albert Lea or west of Austin. East of Austin you will find them growing finely, but as soon as you

Ponderosa and jack pine planted at the same time, showing difference in style of tree and rate of growth.

go west of Austin you find none of them doing well except under shelter. I find that planted in black oak timber where the oak is dying out, it does well. The spruce is doing well, but the white pine is doing particularly well, and I am cutting out the old black oaks as fast as they die, and the little evergreens are rapidly coming on to take their place.

Mr. C. S. Harrison: On the Missouri river the white pine is doing well, but as you go west a hundred miles up the river they are not doing so well. With me the white pine and the Pinus flexilis is doing well; they are eminently satisfactory, especially the flexilis from high altitudes.

F. J. Cowles: Have you been troubled with winter-killing of the arbor vitae?

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Mr. Wedge: Very much—and in this connection I want to tell you an interesting experience of a neighboring nurseryman of mine. Three or four years ago he had a surplus of arbor vitae. They were looking very fine in the fall and winter, and in the spring he sold me quite a number. He was fortunate in digging them very early in the spring, before they showed the effect of the winter. They went through all right, and he got his pay for them, but all of the same lot of trees left in the nursery unsold were a little later entirely dead to within a few inches of the ground.

Mr. A. B. Lyman: What reason would you give for that?

Mr. Wedge: Those trees were dead when he dug and sold them, but they seemed to have enough sap in them to hold their color, and looked all right for a time. A case of the "early bird"—and the worm.

Mr. Brackett: I would like to have it explained why the arbor vitae up about Duluth and north of Duluth is doing so well. There are hundreds of acres of arbor vitae in that part of the country that pass through the winter in perfect shape.

Mr. Wedge: The answer to that question is beyond my ability.

Mr. C. S. Harrison: It is a winter drought that does the mischief; that is the great trouble. In that section of the country there is plenty of snow and consequently more moisture, and they do not suffer from this winter drought.

Mr. Brackett: Yes, but last winter it was very wet with us, and still there was a great deal of trouble of that kind.

Mr. Wedge: Perhaps our dry winter air has an effect. These trees are of the Rocky Mountain species. This is the concolor (indicating), which I consider one of the finest trees you can plant for home adornment. I think it is fully as hardy as the white pine. On the grounds of Carleton College, and at different other places, I have lately seen glorious specimens of the concolor. I think it fully as fine an ornamental tree as the blue spruce.

Mr. Harrison: It is the best evergreen on earth; it will hold its foliage until old age. The trouble however is that we have been getting our concolor trees from the lower altitudes of the Rockies, and that is not a fair test of them. This year I got my seed from a high altitude, and it will produce trees all right for Minnesota.

Mr. Wedge: They do not grow so slow either after they have made a start. The foliage is soft and smooth, and you do not need to be afraid of it like blue spruce. If you do not get one of the concolors set on your ground, you will find that you have missed one of the most charming of evergreens.

This is another one of the Rocky Mountain trees. (Indicating.) It is the great timber tree found all over the mountains. This is known north and south as the Douglas spruce, or the Douglas fir. As you get it here in lumber it comes from Washington and is called the Washington fir. It is one of the very best timber trees, and an excellent tree to plant anywhere in Minnesota. I have seen a good many specimens in a number of places in our state and have seen very few failures. As a nursery tree it is more irregular in its growth than

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the Norway spruce, and you must not expect to see such a regular tree as the white or Norway spruces if you plant it.

Mr. C. S. Harrison: The government gives over fifty names locally applied to the Douglas spruce; their variation is very extensive.

Mr. Wedge: This is brother Harrison's favorite (indicating), the ponderosa, and this is its sister tree of the eastern continent, the Austrian pine. They are much alike. The ponderosa is inclined to look as if its hair has been done up in curl papers, while in the Austrian the leaves are quite straight and stand out stiff and firm. The foliage of the ponderosa is lighter colored than the Austrian pine, and the leaves are frequently in bundles of three, while the Austrian is in bundles of two. These are the principal distinguishing features. I think the Austrian is the pine most commonly found in the Black Forest of Germany, and I think the color of this tree has given the name to that forest. I forgot to state that one of the most distinguishing features is the bud. The bud of the ponderosa is a flesh color, while that of the Austrian pine has a white down over it. Frequently when they can not be distinguished in any other way, you can tell the variety by the bud.

Mr. S. H. Kenney: Don't you think the Austrian pine is a slower grower.

Mr. Wedge: Yes, somewhat so. On the whole I regard the Ponderosa much the more valuable of the two species for our section.

Here are four types of spruce (indicating) that do very well with me. The Norway is the most commonly planted. It is much the cheapest tree to grow in the nursery and one of the easiest to transplant. The next tree is the white spruce. The white and the Norway are sometimes hard to distinguish. If you see them in large blocks there is no difficulty in distinguishing a block of one from the other, but where you see a single specimen it is sometimes hard to tell which it may be. The native white spruce of northwestern Minnesota I consider the finest type we can grow for general purposes. It is a good, thrifty grower and far more dependable than the Norway all over the state.

Mr. Kenney: Are they expected to grow as large as the Norway spruce?

Mr. C. F. Gardner, (Iowa): I should think the Norway was the better timber tree.

Mr. Wedge: The white spruce is close to it; after it gets out of the nursery it will grow well.

Mr. Gardner: It has denser foliage than the Norway.

Mr. Wedge: It stands the winter better, it stands the entire season better.

Mr. Emil Sahler: Are the branches the same as those of the Norway spruce?

Mr. Wedge: In the older trees the little branchlets of the Norway have a drooping or hanging form while in the white spruce they stand out more straight or horizontal. The white spruce is more stiff in its growth; the Norway is pendulous and flexible.

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Dr. H. M. Speechley, (Man.): With us the white spruce is one of the easiest trees to grow in the Northwest. We grow it a great deal in Manitoba:

Mr. Wedge: We have here (indicating) one of the finest forms of the white spruce, called the Black Hills spruce. These grow just as you see them here, extremely dense and bushy. The three spruces are very much alike, as you can see from these specimens.

Mr. Sahler: Which would be the better size to plant and the more apt to grow, a tree a foot high or one twenty or twenty-four inches high?

Mr. Wedge: I don't think size is so important if other things are equal. However, there is no doubt a small tree is easier to start and can be handled more safely than a larger tree. If you get a tree with roots in good condition, showing that it has been properly transplanted and handled in the nursery, you will find that even at two, three or four feet high it will transplant safely. But the sizes from twelve and twenty-four inches are the really practicable ones to handle in quantity.

Here is a blue spruce (indicating) probably five years old. This is a blue specimen of the choicest color. There is one thing that should be remembered in connection with the blue spruce, and that is, that it does not generally take on its true color until it gets to be a little larger than this, say eighteen to twenty-four inches. Out of one hundred small trees you may have ten blue ones, but if you keep them four years longer you may have twenty-five blue trees among them. I once planted a green one some three and one-half feet high, and two years from that time I was surprised to have it turn a nice shade of blue, and it has held that color ever since. I never knew one to change back from blue to green. In getting the blue spruce from the nursery you must not be disappointed if they are not so very regular, because they are frequently very irregular in the nursery. They frequently lose a bud or more from some cause, which gives them an irregular appearance for a time. There is no evergreen that is more hardy and dependable than the blue spruce. There is no other evergreen I have shown you today but what has disappointed us, "shown the white feather," in some seasons, but I have never known the blue spruce to do such a thing.

Mr. Sahler: The woodpeckers come into the spruce and seem to pick holes around the bark, and I would like to know whether or not they can hurt them enough to kill them.

Mr. Wedge: I presume they might if they become too abundant. I understand the so-called sapsucker along the shore of Lake Michigan above Chicago has injured the Austrian pine very much; it feeds on the inner bark of the Austrian pine and has almost ruined them.

Dr. Speechley: We have had quite a mortality on trees on account of the yellow headed sapsucker.

Mr. Lyman: What would be the best time to transplant evergreens, early in the spring or later in the season?

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Mr. Wedge: That is an interesting question, and I think you will all agree that in our section of the country the latter part of April is the best time to transplant evergreens. You have all heard of the old rule of June being the best time to transplant the evergreen, but in my opinion that is the worst of all times. I have transplanted evergreens successfully in July, just after the new growth had hardened. I have done it even later, and one year I had very good success in planting late in the fall, in October, which would supposedly be a fatal time to move evergreens. However, one year I made an exhibit of evergreens at our county fair grounds and transplated perhaps fifty of these different varieties to illustrate what I have shown you here today. They were not handled very carefully, and I paid no attention to them until the next year, when I went there to arrange for another exhibit and brought another lot of trees to show, and I found that over one-half of the former planting were living and had made a fair growth. I can assure you that I was never more surprised than to see that October setting living and thriving. So it seems that the possibility of success with evergreens is not limited to any time of the year. With favorable conditions, I would not hesitate to plant at any time of the year.

Mr. C. S. Harrison: In the east they plant in August, and I tried to do the same and made a miserable failure of it; but I planted in August this year and didn't lose a one. As far as June planting is concerned, they are then in a tender condition, and although you can plant them, and they will grow, it will take them two or three years to recover.

Mr. Brackett: You would not advise the transplanting of evergreens in the fall when you can transplant them in the spring.

Mr. Wedge: By no means. The time to transplant them is just as the buds are starting to grow in the spring.

Mr. Brackett: That is exactly right, just when the buds begin to swell a little.

Mr. C. S. Harrison: Early spring planting is a good time; just as the bud begins to swell, that is the best time.

The Ever Ready Nitrate.—One form of commercial fertilizer deserves special mention on account of its peculiar adaptability to the needs of the gardener. It is nitrate of soda. The process of rendering the nitrogren in the soil and manures available for plant growth is a slow one, especially in the early spring. In nitrates we have just the element most needed, immediately soluble and available to the plants. By applying it in small quantities, about as fast as the growing crops can use it, a vigorous growth of foliage can be stimulated at small cost and at a time when the product will bring the most money upon the market. It should be applied at the rate of about 100 pounds an acre, at intervals of about two weeks. Apply broadcast, when the foliage of the plants is perfectly dry, or just before or during a rain. The effects can be seen within a few days by the darker colored foliage and unusually thrifty growth.

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Western Horticultural Society, Annual Meeting, 1909.

R. A. SCHUTZ, LE ROY, DELEGATE.

On February 16th, your delegate left the institute corps at Glenwood, and boarded the Winnipeg flyer at 9:10 p. m. en route to Manitoba. We crossed the boundary line at Noyes, and soon after the inspector came around and nosed into everybody's belongings, but made no further disturbance, at least not with the writer, as the inspector was a very large man and my clothes would not fit him.

At 19:30 (Winnipeg way of noting time) the following morning I arrived at my destination and was at once driven to the Clarendon Hotel, one of the best in Winnipeg, where the committee in charge of delegates had arranged for very comfortable rooms and entertainment at their expense. The horticultural and agricultural conventions of the Dominion of Canada were held in the agricultural school building, a spacious structure which is in keeping with the city of Winnipeg. An agricultural grain fair was also held in one of the apartments of the same building at the same time; also a meeting of the beekeepers' association held a session. All of this was very interesting, but had the effect of distributing the crowd, and consequently the horticultural meeting was not so well attended as we had wished, although the interest in horticulture was very deep.

Many papers of interest were read and freely discussed, several addresses were given and thoroughly discussed, in which your delegate was given his full share of the time. At the evening session of February 18th the portrait of the late Richard Waugh was unveiled. The deceased was a very prominent horticulturist and had done much in advancing fruit growing and the Western Horticultural Society to its present very promising condition. The portrait of this great man will hereafter hang conspicuously in College Hall. The unveiling of this portrait was assigned to Rev. Dr. Sparling, of Wesley College. The occasion was very impressive and interesting to the writer.

The agricultural display of grains was simply great. There were 104 contestants for the gold and silver medals, given for first, second and third best samples of wheat, oats and barley. The committee kindly presented the writer with one quart samples of the three different sweepstake grains, which is very much appreciated, as this will enable him to start a miniature Canadian experimental station in Mower county, Minn.

Free dinner was served each day in the large dining hall of the agricultural school building, with a seating capacity of about 500 people. There certainly was a big crowd, and everybody was busy.

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Your delegate found our Manitoba neighbors (and rightly we can call them neighbors for we join farms) the most congenial and social people he ever met, and from the very beginning felt quite at home among them.

The country around Winnipeg is very attractive, dotted with beautiful homes, somewhat far apart, because of the large farms. Winnipeg is an interesting city with 157,000 inhabitants, three daily newspapers, 130 churches, twenty-four schools, and one agricultural school. The Bible is read in 144 different languages. It has sixty-six hotels, 100 policemen and no open saloons, but each hotel of fifty rooms or more has an open bar which must be closed at 7 p. m. and on Sundays. An inspector visits each hotel at short intervals and holds the landlord responsible for any violation of the law. The question arises, would the writer rather live in Manitoba than in Minnesota, and the answer is "*No.*" Mower county is "home, sweet home" to me, and I would advise our Winnipeg neighbors, and all others, that when the end is near, and just before going to heaven, to spend some time in Le Roy, Minn., and the change will not be so great.

A Year with the Plant-Breeders of Minnesota.

CLARENCE WEDGE, SECY. PLANT-BREEDERS' AUXILIARY.

The Plant-Breeders' Auxiliary completed its third year with a membership of 226 and a growing interest in the work that is even more satisfactory than its increasing membership. The loyal response of 112 members to the call for a report furnishes the material for the summary of the work of the year which is given below.

The number of seedling apple trees which our members have growing for fruiting purposes was the most surprising thing that came out in these reports, as 112 members report a total of 10,763 seedling apple trees growing on their places for fruiting purposes. Leaving out the 1,000 seedlings reported by Mr. C. F. Gardner, of Osage, Iowa, and 3,000 reported by W. A. Palmer, of South Dakota, the average number of seedlings grown per member is sixty. Taken at random I find the following to be about the way they run 64, 100, 24, 141, 28, 53, 15, 18, 50, 300, 350, 140, etc. When it is considered that this large number of seedlings so well and evenly distributed are in the great majority of cases grown from our best standard varieties, such as the Malinda, Wealthy, Duchess, Patten's Greenings, etc., instead of from seed taken at random as formerly, we may have great satisfaction at the prospect of improvement in our present apple list

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by the work thus largely undertaken. Of the seedlings reported, only 456 have borne fruit, which together with the reports themselves indicates that by far the largest share of these seedlings have been only recently started through the influence and work of our auxiliary.

It is also evident from the reports that the liberal premium of $100 per annum has acted as a spur in the good work, and that the distribution of seed of the Malinda and Wealthy made by the society has been particularly useful. Probably not more than half as many seedlings would have been started, and the quality of the seed would not have been nearly so good, if the members had been left entirely to their own resources in this matter, many of them living as they do in the new sections where there are few orchards and where there

Crossing work on strawberries being done at the State Fruit-Breeding Farm, in green house in midwinter.

is difficulty in securing northern grown seed. Of the seedlings reported 3,078, or about one-half, are especially mentioned as being entered for competition for the $100 seedling apple prize. Their ages range from one to three years, and their condition is generally reported as good, although drouth and the usual late fall growth and consequent killing back of the tips are frequently mentioned as among the difficulties encountered.

In answer to the question "Have any of your seedling apple trees produced a superior quality of fruit that will keep later than midwinter?"—only a bare half dozen reported favorably, which also goes to indicate that the plantings have nearly all been of recent date.

Of the other fruits we find twenty-seven members are growing plum seedlings, seven strawberry seedlings, five hybrid sand cherry seedlings, four pear seedlings, four raspberry seedlings, three sand

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cherry seedlings, two each of grape, peach, cherry and currant, and one a gooseberry seedling. The reports indicate that there is much interest in plum growing and that quite a number are crossing our native America with the larger fruiting kinds.

In answer to the question, "Are you growing seedling roses, shrubs, etc.?"—we find that the peony leads in general interest, four being at work with this popular flower, three with roses, two with lilacs and one each with phlox, high bush cranberry, honeysuckle and mock orange. We trust that the interest in this important section of seedling growing may in the future keep pace with the general popular interest in ornamental planting. The possibility of immediate improvement of roses for our section through careful seed selection and hybridizing is so great and promising as to demand a much larger attention than it has so far received.

The work done in hand-crossing fruit blossoms shows a surprising increase, seventeen members having attempted work of this kind. There has been, however, an unusual number of failures on account of the general dropping of fruit and the failure of the fruit crop the present season, so that only six of the seventeen were successful.

One of the most valuable questions proved to be that asking for suggestions as to further work pertaining to the society, a digest of which we submit as follows:

Ole J. Hagen, Hendrum, Norman county, northern Minnesota, suggests that the blood of the northern native plum be introduced into the best standard varieties to produce early varieties.

Mr. Max Pfaender, New Ulm, has produced a white Compass cherry, and has some good sand cherry seedlings. He recommends that the society make a complete list of desirable crosses, and at our winter meeting call for volunteers to undertake such work as may be sent them and report success at next meeting.

Prof. C. P. Bull, St. Anthony Park, recommends that the society send out an expert at the proper season to show members how to do hand-pollination.

R. A. Schutz suggests a uniform record book small enough to fit an inside coat pocket, with pencil attached, to keep record of seedling crosses and grafts.

Mr. C. F. Gardner, Osage, Iowa, is doing a large work with apple seedlings, and has a number of very promising hybrid plums.

Peter O. Vangen, Climax, is hand-crossing the grape, using the Massasoit, Beta, Janesville and a seedling of his own.

R. E. Crane, Grand Meadow, reports a seedling similar to N. W. Greening that he is propagating, which appears hardy and keeps as well as the above variety.

That faithful friend of the society, Hon. R. W. Probstfield, Moorehead, is growing many apple seedlings, and offers the following for our consideration. "I suggest the importation of pear seed by

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judicious selection of our fruit experts from any country from where success might reasonably be expected, to be supplied to the University Farm and experimental stations, and in a limited amount to any one who takes interest enough in the subject to undertake the work. There was a time when it was thought, 'Apples can not be raised in Minnesota.' What a glorious change from that time! The finding of 'our pear' will have to follow the same line as the apples, but perhaps with less success."

A. T. McKibben, Ramey, is having good success in hand-crossing the apple. He believes in using Pyrus baccata for stocks and in establishing an orchard out by itself where pure seed could be grown.

J. R. Brown, Eureka, reports as follows: "I have a strawberry of exceptional value. It is large, fine, firm, a good keeper, good strong foliage, stout stems holding the fruit well up from the ground and an exceptionally good bearer. I have grown 156 varieties, and this I think the best berry I have ever had."

Michael Olson, Montevideo, suggests that a paper on the planting of seed and care of seedlings be published in the Horticulturist. Others make a similar suggestion.

W. J. Tingley, Withrow, suggests that the society offer a premium for a new rose at the summer meeting, the standard to be set by the executive board.

Erick Omland, McIntosh, northern Minnesota, has a seedling plum named "Viking" that he considers of value.

Geo. J. Kellogg, Lake Mills, Wis., reports a new winter seedling from Dodge Co., Wis., of superior merit; has begun propagation. He believes that it is wasting time to plant apple seed that is not the product of hand-crossing.

H. H. Pond, Minneapolis, reports his seedling apple which he has named Pride of Bloomington, which has kept in his cellar till April. Fruit size of Wealthy, partly red. Was awarded first prize for winter apples at state fair of 1907. His No. 4 keeps about as well but is not quite as large. He also has several other excellent ones. He is surprised at the general excellence of his seedlings, nearly all being of some value.

Walter Yahnke, Winona, has a seedling plum that ripens before Cheney, large size, color of Stoddard, good quality and very prolific, bearing a crop when others fail.

J. F. Benjamin, Hutchinson, is growing seedlings from a plum bearing near him, the fruit of which is 1¾ in. in diameter, and of fine flavor. The trees were planted thirty years ago. Is expecting the seedlings to fruit next year.

Miss Charlotte E. Dickman, St. Paul, reports a supposed seedling of the Duchess that keeps till May.

L. Johannessohn, Beltrami, is working with the western sand cherry, and has seed of the third generation. His selected seedlings are prolific bearers, not subject to fungi. Fruit of large size, and good flavor compared with the original wild bush. Especially valuable for jelly.

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It seems clear from these reports that a good share of the members of our society are willing and even eager to assist in the work of plant breeding if they can be supplied with seed or seedlings and definite directions for handling them. We believe that such distribution already begun should be continued and enlarged, and that the premiums that have done so much to encourage and attract attention should be made a permanent feature of the work of our state society.

Mr. C. F. Gardner (Iowa): Do you know anything about the plum originated by Mr. Moore, of Spring Valley?

Mr. Wedge: I know this about it; he sent me a sample box; they are good size, quite firm, and I think somewhat acid. I think they are very promising.

The President: I am sure we are all glad to have Mr. Patten with us, and I am going to call on him to say a few words in reference to this subject of plant breeding.

Mr. C. G. Patten, (Iowa): I assure you that I am greatly surprised in listening to Mr. Wedge's paper to learn of the work that has been done in your state; it is certainly really wonderful. When we look back a few years and see the condition of pomology in this state and in the Northwest, we can hardly realize that this work has been carried on for only a short time, but there is a spirit of enthusiasm aroused in this direction in reference to this breeding problem that is sweeping over the entire country.

As your president remarked—in substance at least—such work as this is really going to transform the whole theory of plant-breeding in the United States, and in the next twenty-five years will add millions to the wealth of this country, besides the satisfaction of having worked out a new problem.

I want to add just a little to the word about planting seed. As many of you know, I have been doing a good deal of that work for quite a long time, and last year was the culmination as far as the production of a large number of varieties of apples. This year followed with a large variety of plums that are in bearing, and the perfection of fruit of the natives and their crosses, and crosses with the prunes of several varieties, the prunes with the Japanese plums and Japanese hybrids. Altogether this year I have planted about ninety varieties of the apple and their crosses and combinations—between nine and ten thousand seedlings. I have also planted some fifty or more varieties and combinations of varieties of plums, fully two thousand seedlings; also quite a good many of the pear, some twelve different varieties; also about 600 peach pits, from five different sources, but mostly grown in Floyd county, where I live. I have also crossbred the black walnut, crossing it with the English walnut, so that I have sixty nuts of the black walnut so bred—and I want to say I went over those blossoms three times with my own hands to be sure I had done the work thoroughly. I did a little work also with the butternut, but do not feel as confident of that. I make this statement in addition to the report by Mr. Wedge, so we may know what is being done here in the Northwest, and certainly out of this work is to come something that in many cases will be a surprise to us all. No one, unless he has followed the reports of the American Breeders' Association and the reports of the Agricultural Department of this country, can comprehend the magnitude of this work, the scope of

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the plant-breeding in this country. Too much credit cannot be given to our Secretary of Agriculture, Mr. Wilson, for the manner in which he has taken hold of this problem, that is more fundamental to the prosperity of the United States than any other one thing I can think of. His assistant secretary, Prof. Hays, whom you all know so well and who was largely trained in his own state of Iowa—where he began his experiments in plant-breeding—has certainly been a power in this work, as his papers indicate. (Applause).

The President: It seems to me there is a very helpful field for this Plant-Breeders' Auxiliary, that was started three years ago. It has been taken hold of with considerable enthusiasm and energy, and I am sure that the results will prove that it was a good movement to inaugurate.

Mr. G. W. Studley: I want to ask if there is any one here who can give me any light or instruction on the pear question. I have been dabbling for a good many years with the pear problem. I have tried everything that I could find out about, with the thought that I might strike something favorable. I failed to strike anything of any benefit at all, and I became entirely disgusted and threw the whole thing over. After a while there came up some sprouts from some of the trees I had planted which had died, but I cannot tell you what variety they came from, because I had thrown the whole thing overboard and left the trees to take care of themselves, like my friend over here. But those sprouts seemed to withstand anything that came along, and consequently I got some trees. I think I have six or seven trees, and I have exhibited pears several times, and have always taken first premium because there were no others to compete with me. (Laughter). I have become interested in this question, and I am trying to find out whether it is not possible to get something out of this experience. I was called the biggest fool in the country because I persisted in plodding along against all kinds of difficulties, but I believe this is one of the difficulties that we are eventually going to overcome, and I am really interested to know whether there is anyone else conducting experiments along the same line as myself. These trees seem to be perfectly hardy, and I never see any insects or blight on them. I have never taken any pains with them. One good thing about this tree is that it does not grow like the common pear tree, away up out of reach, and a person who was not acquainted with it would think it was a Northwestern Greening, because it has such a nice, symmetrical top. I am very much interested in this subject, and if any one has anything to offer I would like to hear it.

Mr. J. P. Andrews: In what locality is it grown?

Mr. Studley: At St. Peter, where we raise governors. (Laughter).

Mr. Seth Kenney: I have five pear grafts growing on the Peerless apple tree—and I don't think I could grow much of anything else on it. I have five that I got from Capt. Reed, of Glencoe, last spring. They look very well. I thought the leaves of the Peerless resembled the pear, so I put them on the Peerless.

Mr. S. P. Crosby: Thirty-five years ago, in the old home in Maine, I knew of pears grafted on the mountain ash, and they grew very well.

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A Demonstration in Soils.

PROF. HARRY SNYDER, ST. ANTHONY PARK.

Separating Sand, Silt and Clay in Soils.

Select for the purpose an average sample of soil from your farm. Dry, pulverize and mix it well. Place about two tablespoonfuls in a pint fruit can nearly full of water. Put on the cover and shake vigorously for two or three minutes. After the can has been at rest for about a minute, pour off the muddy water into a second can, leaving the sediment in the first can. Observe that this sediment is coarser and more sandy than the original soil. The shaking and settling result in the coarser and heavier sand fragments being deposited, while the lighter clay and silt particles remained suspended in the water. Allow the second can to stand for about five minutes, and then pour off the muddy water into a third can. Observe that the sediment in the second can is much finer than that deposited in the first. By repeating the washing, the larger portion of the fine clay and silt can be removed from both cans, leaving in each deposits of very fine sand. Clay and silt being much lighter than the sand, they remain in suspension. After standing for some time, the silt is deposited, leaving only the clay. Silt is the fine material often found as a deposit in drains and ditches.

Clay is the finest grade of particles present in a soil, each clay particle being less than .0002 of an inch in diameter. Soils are a mechanical mixture of these different kinds of particles: sand, silt and clay. In some soils, sand predominates; while in others, silt or clay. The amount of sand, silt and clay in a soil determines its character for crop production more than any other factor. If the soil contains a large amount of sand, it is porous and fails to retain moisture sufficient for many agricultural crops, while on the other hand, if the soil contains an excessive amount of fine clay it is not porous enough to permit good drainage, and the crops suffer from excess of water and lack of ventilation in the soil.

There are a number of combinations of sand, silt and clay that make excellent soils for general farming purposes. A mixture of thirty per cent of fine sand, fifty per cent of silt, fifteen per cent of clay and five per cent of vegetable matter makes a combination that is suitable for a great variety of crops. Many of our best prairie loam soils have about this mechanical composition. While it is not possible to change directly the percentage amounts of sand, silt and clay in soils by cultivation, the addition of manures and the rotation of crops

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increase the amount of humus, or vegetable mould, so that the effect is practically the same as if sand or clay were added. In a sandy soil, humus takes the place of clay, binding together the particles, thus making the soil more retentive of moisture, while the addition of humus to a clay soil causes the clay particles to unite, forming compound soil grains which act as sand, tending to improve the general mechanical condition and tilth of the clay.

There are a number of distinct soil types, as coarse sandy soil, fine sandy soil, loam, sandy loam, clay loam and heavy clay soil. Each of these soil types requires a slightly different method of treating and manuring, and each responds differently to cultivation. Many mistakes are made in agriculture by attempting to grow crops on soils that are not mechanically suited to their production. It is well for a farmer to determine in a general way the type to which his soil belongs and the approximate amounts of sand, silt or clay present. Many soils that are called clay are in reality made up largely of silt, the particles of which are intermediate in size between sand and clay.

From the amount and kind of sediment in the cans, the general character of a soil, whether it is sand, silt or clay that predominates, can be determined.

To form a correct idea of the value of a soil, both the surface soil and the subsoil should be considered, and the sand, silt and clay content of the subsoil should be included in the test. Too often the character of the subsoil is overlooked. Nature has separated and deposited soils in much the same way as described in this experiment, and it remains for man to determine what crops are best suited to each kind of soil.

The Texture of Soils and Cultivation.

If the soil is dark brown or black it is an indication that there is a good supply of vegetable matter, or humus. Usually black, dark brown and yellow soils are the most productive. Not all black soils, however, are equally productive, as some contain acid substances that are injurious to crops.

Note whether the lumps of soil crush readily. Soils that form hard lumps which crush with difficulty are not easily tilled. Wet some of the soil and knead it in the hand. If it is sticky and feels oily when rubbed between the thumb and forefinger the soil contains an appreciable amount of clay. Grains of sand have a sharp, gritty feeling, and the more sand and silt there is in the soil the less plastic it is. By the feeling of a soil when wet it is possible to determine whether it has sand- or clay-like properties. Test the surface soil and subsoil

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as to its grain, both when wet and dry. Some soils contain an excess of clay, and as a result they are not easily worked or drained. On the other hand, some soils do not contain enough clay to keep them from rapidly drying out.

Clay Loam Soils.—In color many of these soils are black, indicating a good supply of accumulated vegetable matter. The small lumps crush easily, due to the presence of sufficient sand to prevent the formation of hard lumps. When the soil is wet and kneaded in the hand, there is a slight tendency to form a sticky mass, and when rubbed between thumb and forefinger the gritty sand grains can be felt, but the sharp sandy feeling is modified by the fine clay that is present. When well drained and free from excess of either acid or alkaline salts, clay loam soils are generally of high fertility, are capable of producing a variety of crops, particularly grasses and grains, and are responsive to judicious cultivation coupled with crop rotation and the use of farm manures. A five to six year rotation of crops consisting of two to three grain crops, a corn crop (manured) and one year each of meadow and pasture in which clover forms the main part, is the best system of cropping for a clay loam soil. It should be plowed to a medium depth, four and a half to six and a half inches, depending upon the season and the crop to be produced. The cultivation should be thorough, a fine seed bed produced, and the land lightly rolled, if necessary, to pulverize the clods. A clay loam should be given deeper and more thorough cultivation than a sandy loam. As a general rule our soils are not cultivated enough. A large amount of plant food can be rendered available by cultivation. The yield and quality of farm crops could be materially increased by better and more thorough cutivation.

In many of the western prairie states there are large areas of clay loam soil rich in reserve plant food, capable of producing the best of crops if given intelligent treatment.

Is Your Soil Acid or Alkaline?

Procure from your druggist small pieces of sensitive red and blue litmus test paper. The blue paper is used to test for acids, and the red paper for alkalis. When the blue paper comes in contact with a moist substance that contains acid the color is instantly changed from blue to red, and in like manner when a substance contains an alkali the red litmus paper is changed to blue. To determine whether a soil is acid or alkaline, place pieces of the blue and red litmus paper against the moist soil that is to be tested, and leave it in contact for one or two minutes. Examine the test paper. If the blue litmus has changed

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to red, it is an indication that the soil is acid in character. If the red paper has changed to blue, it indicates that the soil is alkaline. If neither of the papers are changed in color, the soil is neutral.

Peaty, poorly drained soils containing a large amount of vegetable matter are quite apt to be acid. Soils that contain appreciable amounts of lime give an alkaline reaction, and such a reaction does not indicate an undesirable condition of the soil. If a soil gives an acid reaction, wood ashes or slaked lime or any alkaline fertilizer is beneficial. On the other hand, alkaline soils are benefited by applications of humus-forming substances, as farm manures and sod crop residues. The vegetable matter, or humus, when it decays, produces acid materials which unite with the alkali, forming neutral products. Alkaline salts often accumulate in soils because of poor drainage, and to improve an "alkali soil" it is often only necessary to secure good drainage.

Acid and alkaline soils each require a different kind of treatment, especially in manuring. Some of our best soils are those that give mildly alkaline reactions. Such soils respond to the application of farm manures and to the rotation of crops better than do acid soils. Clover, alfalfa and the legumes in general are particularly adapted to mildly alkaline soils. An excess of alkaline matter is destructive to plant growth, while a small amount is often beneficial. Many of our most productive soils owe their high fertility and good wearing qualities to the lime which they contain. When there is a liberal supply of lime in a soil in the form of pulverized limestone, an effervescence or foaming takes place when the soil comes in contact with an acid material. This is due to the liberation of carbon dioxide gas. Many of our Minnesota soils and subsoils contain sufficient lime to cause effervescence when mixed with strong vinegar. Such soils are well supplied with lime.

In parts of the United States there are large areas that are acid in character and that are improved by the application of lime, and where the full value of farm manure is not secured unless some alkaline fertilizer, as lime or ashes, is used with the manure. There are also large areas that are alkaline in character and have no need of alkaline fertilizers, but are particularly benefited by farm manures and the plowing under of clover and grass crop residues, which through processes of decay produce acid materials that readily combine with the alkali in the soil, thus improving the physical condition for plant growth, and often changing the destructive alkali to valuable forms of plant food. It is highly desirable that a farmer should know whether his soil is acid, alkaline or neutral in character, as he is then better able to determine the kind of fertilizers required and the method

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of treatment it is necessary to give his soil in order to secure the best results.

Mr. F. W. Kimball: What is the best use to make of wood ashes?

Prof. Snyder: A most excellent practice for many of our crops is to give the soil a light dressing of wood ashes. It not only adds potash to the soil that is needed, but it helps a great many soils in the way of making them more mellow and capable of being worked up in better shape.

Mr. Geo. J. Kellogg (Wis.): Is there any danger of using unleached ashes when the foliage is wet?

Prof. Snyder: It might injure the foliage to some extent, especially if put on too thick.

Mr. Kellogg: Is there danger of putting on too heavy a dressing of ashes?

Prof. Snyder: Yes, ashes should not be put on so thick as farm manure, which can be used more generously.

Mr. Kimball: Would you mix ashes with stable manure?

Prof. Snyder: It can be mixed, yes.

Mr. Kimball: Any danger from the chemical action?

Prof. Snyder: There would be if not immediately plowed, and if you were to take wood ashes and hen manure, it would result in the liberation of ammonia, but where it is plowed under immediately, the danger is small.

Mr. H. J. Baldwin: I noticed where we put hardwood ashes it would make the potatoes very scabby; they were not fit to use.

Prof. Snyder: I don't know why we should want to lay that to the ashes, although it would look as though the ashes were responsible for it. I think it would be, perhaps, due to other conditions, or the responsibility would be perhaps divided among some other causes.

Mr. Baldwin: I hauled out about fifty bushels in the spring, and wherever a pile would come the potatoes were perfectly worthless in a circle two rods around the pile.

Prof. Snyder: The seed had not been treated?

Mr. Baldwin: No, but the rest of the patch was all right.

Prof. Snyder: That was no lower than the rest of the ground?

Mr. Baldwin: No, it was on high ground, all of it.

Mr. Kimball: I noticed wood ashes are the right food for onions.

Prof. Snyder: Oh, yes, they are very good for onions.

Mr. Baldwin: Are ashes valuable for strawberries?

Prof. Snyder: Yes, very valuable.

Mr. Baldwin: Would it be best to work the ashes in the ground or put them on top?

Prof. Snyder: Work them in the ground the same as our farm manures.

Mr. Clarence Wedge: Is it important when a second crop of clover is plowed under, so far as reducing the acidity in the soil is concerned, whether it is plowed under before freezing weather or after freezing, after frost.

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Prof. Snyder: While I think it would not make such a large amount of difference, it would depend more on the way in which it was mixed with the soil, the condition in which it was left. If the clover was rather rank and heavy and luxuriant, it would be very apt to cause quite rapid decay at one time, and this might produce a little bit more acid than the soil could take care of all at once. If decay is a little slower there is not so much acidity produced at one time, and there is enough alkali in the soil to overcome any acidity present. So a little slower decay of the clover under such conditions would be more desirable, although many of our soils are so rich with lime that there is no difficulty.

Mr. F. J. Cowles.: How do you recommend putting ashes on land?

Prof. Snyder: Some of the grass seeders are so constructed that they spread it well.

Mr. Cowles: Could it not be arranged so they could be spread with a common manure spreader?

Prof. Snyder: Yes, if there was chaff or something of that kind mixed with it, it would work well. We have to be careful not to use it too freely when spreading it.

Mr. J. M. Underwood: Would plowing under clover in June be likely to cause any acidity of the soil, or change its character, making it poorer soil.

Prof. Snyder: There is little danger in most soils, but where such conditions exist, if you will, just before plowing under, spread broadcast a couple of hundred pounds of lime or more, that difficulty will be overcome, and then you will get the benefit of the clover.

Mr. Underwood: If I had plowed it under before treating?

Prof. Snyder: Then I should treat it.

Mr. Underwood: What do you know about phosphate rock?

Prof. Snyder: Phosphate rock costs us $9.00 or $10.00 per ton. Where it is used it should be used with stable manure. It is slow in action. I think you would better use treated phosphate rock; it costs $3.00 or $4.00 a ton more, but it is more active, and the immediate returns are larger from its use, and it is more valuable on that account. I should experiment in a small way first.

Mr. J. C. Hawkins: Would heavy clay soil that produces abundant crops of clover, produce apples?

Prof. Snyder: It could be good for nearly any purpose, for any kind of fruit. If that soil is properly handled, you will find it suitable for fruit.

Mr. Seth Kenney: What is the relative value of clover plowed under compared with barnyard manure?

Prof. Snyder: I think we would find the clover in the long run a little better. There have been a number of cases at our Experiment Station where the experiment of plowing under clover and using an equivalent amount of farm manure has been tried, and the clover comes out a little ahead, under similar conditions.

In closing this subject a story comes to my mind of the New England custom in early days of having a clergyman bless the soil so

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as to cause it to be more productive. The story goes that one man was not a good farmer and neglected to manure and cultivate his land every year, and the clergyman who was to bless his land was a sensible sort of a fellow and knew what good farming was. Instead of blessing the soil, he said to the farmer: "Your land does not need blessing; it needs manure." (Laughter.) That is what most of our soils need today, manure. (Applause.)

Purpose and Process of Cross-Pollination.

PROF. LE ROY CADY, HORT. DEPT., ST. ANTHONY PARK.

Pollination is the process of placing pollen on the stigmatic surface of a flower. Then cross-pollination means the carrying of pollen from one flower to another. The resulting growth of this pollen into the seed is called fertilization. In all of our fruits, flowers or vegetables, pollen, the male element of a flower, must be carried to the stigmatic surface of the pistil, the female part of the plant, and there undergo, through proper combination or fertilization, a growth which in time matures into the seed of the plant. If this seed pollen is from the same flower or plant, we say the flower is self-pollinated, and, as a rule, a continued breeding within the same plant for a series of years does not tend to strengthen the offspring of that plant any more than continued in and in breeding of stock strengthens their progeny. Hence, it is well to bring pollen from another plant of the same class. Cross-pollination must be between different plants of the same species.

According to well established laws of breeding the offspring, or seedling, resulting from the crossing of two plants will have the characteristics of both more or less marked, though they may be stronger of one than the other. Therefore, if we wish to establish a certain character, vigor or quality in a vegetable or fruit, we should first select a plant for our work containing just as many of the characteristics as we desire to a marked degree, and then select another plant containing the special character we want to a marked degree; then take pollen from the one plant to the stigma of the other at the right time and use the seed resulting therefrom.

Suppose, for example, we want to breed quality into a common plum. Select a good, all-around plum, especially healthy and as hardy as possible; then select another of as good quality as possible and carry the pollen to the hardy one at the proper time. Plant the seed resulting from this, and it is probable that a small percentage of the seedlings will have the characteristics desired to a greater or less extent. Almost any character, it is believed, may be bred into a plant,

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such as vigor, hardiness, disease resistance, quality, flavor, etc., if proper care is used, and one is patient enough to wait for results. Perhaps the character may be changed quickly, as in the bean; then, again, it may take twenty-five or more years to establish a desired character in a plant.

Most plants naturally grown are cross-pollinated. Wheat and barley, however, are self-pollinated, but new and more prolific strains have been produced by artificial crossing. Most plants in nature are

A perfect Dunlap strawberry blossom—enlarged to show organs.

cross-pollinated, either by the wind, as corn; or by insects, as apples, plums, etc. Thus, by planting a pistillate and staminate variety of strawberry together, we get a good crop of fruit, because they are cross-pollinated and cross-fertilized. In some plants the stamens and pistils ripen at different times; these must, of course, be cross-pollinated. In cases of this kind, the pistil usually ripens first.

Cross-pollination is carried on in order to secure new varieties. This work should be done systematically in order to know how the results are obtained, thus enabling others to bring about similar results

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if they are desirable or to avoid certain methods if undesirable results are obtained.

From ten to one hundred per cent of crosses ought to set fruit. Out of 10,405 apple, pear and peach blossoms pollinated at Michigan Agricultural College in 1906, 1,946, or about seventeen per cent, set fruit. Probably an average of twenty-five to forty per cent of crosses will set fruit.

Along with cross-pollination must go selection of the seedlings resulting from the seed of the crossed plants. To this end it is desirable to have a great many individuals, so as to select the ones nearest the type desired. Most of our improved plants have been the result of chance crossing and systematic selection.

A B

A. Blossom of pistillate strawberry

B. Blossom of staminate strawberry, showing stamens standing above the pistils.

Study the Plant.—In the cross-pollination of plants the first thing to do is to make a complete study of the plants to be worked with in order to know their construction and character. The essential parts to study are the stamens, or male part of the plant, and the pistils, or female part. Usually in our common plants both are found in the same flower. They both have various forms and characters. Sometimes they are in different flowers; sometimes, when in the same flower, one matures before the other. Sometimes the stamens are all longer than the pistils, thus making self-pollination easy; again, part or all of the stamens are shorter than the pistils, when a different plan must be adopted.

Flowers of different plants vary in their characters as well as their construction. Many plants, in addition to the stamens and pistils, have floral envelopes, as petals and sepals, for protection and also, probably, for other purposes. These parts should all be studied and their relation to pollination and their value to the plant ascertained.

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Some plants, such as asters, dahlias and sunflowers, or other members of the compositæ family, are really aggregations of a number of flowers in one head, and each flower must be considered separately.

Have End in View.—In crossing it is well to have some definite end in view, such as hardiness, quality, etc., and select plants to work

A B

A. Flower of Soulard crab; ready to emasculate.
B. Bud of Soulard crab.

with that have the character wanted present to a very marked degree.

Manipulation of Flowers.—The flower that is to be the seed bearer must be carefully handled in order not to let self-pollination or any cross-pollination except the one desired take place. To prevent this we remove the anthers of the flower just before the pollen is ripe and ready to be shed. Then, if we want to be sure that no other cross than the one desired takes place, we must cover the flower with a cloth or paper sack. Where large numbers of crosses are made this is not often done. If it is not done, there is some chance of other pollen getting to the stigmatic surface of the pistil and beginning its growth before the desired pollen is applied.

This process of removing the anthers is called emasculation. With most of our fruits and flowers the work of emasculating is done about eighteen to twenty-four hours before the pollen is transferred. The anthers may be removed several days before pollination takes place, but this is not good policy, because there is apt to be some injury

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to the stigma from rain or other causes. It is best to remove the anthers just before the pollen is ready to shed. For some fruits, like apples and plums, it is even advocated not to emasculate at all except where the very closest record is to be kept. With many of our plants the stamens and pistils do not ripen at the same time; hence it is not so necessary to always emasculate.

A B

A. Receptacle of strawberry.
B. Stamens and petals of strawberry blossom.

Just when to pollenize is something one must learn from the study of the flower in use. Pollen is ready to use as soon as it sheds readily from the anthers. The stigmatic surface of the pistil, or female part of the flower, is ready usually when it is covered with a sticky material or in other cases when it is rough. A little close observation of flowers soon teaches one this. Pollen may be applied to many plants at the time of emasculation, and if there is no bad weather it will remain on until the stigma is receptive; or, in the case of strawberries, it may be applied several days after the stigma becomes receptive. Pistils that have not been pollinated remain receptive much longer than those which have been. As soon as the stigma is receptive and the pollen applied, it should begin to grow, forming eventually the seed of the plant.

One of the best tools to use in cutting away the anthers (emasculation) and, with them, the floral envelopes, is a good, sharp pair of scissors or a sharp, round pointed knife. Sometimes they may be

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removed with common tweezers or with the thumb and finger, but this is not a good scheme, as the anthers are sometimes broken, thus scattering the pollen.

Collecting Pollen.—As soon as the pollen sacks or anthers begin to break open, the pollen may be applied directly to the stigmas to be pollinated, which is a rather slow process, or the anthers may be collected even before ripe and laid on paper to dry and ripen. It may then be mailed in these papers or taken directly to the plants where it is to be used. In pollinating apples or plums especially, it is a good

A set of tools of convenient use in the cross-fertilization of fruit blossoms—but not indispensable.

plan to collect the pollen in glass tubes, and thus carry it from place to place, applying what is needed to the stigmas by means of a camels-hair brush or something of that kind.

The keeping quality of pollen depends on the health, vigor and species of the plant. Some pollen will keep several weeks, while other kinds will keep but a few days. It is well to use as soon as convenient after collecting. If pollen is to be stored, it should be kept in pasteboard pill boxes—not in air-tight bottles—in a dry room, where temperature does not vary far from 75 degrees.

Sacks.—In order to prevent other crosses than that desired, manila (grocers') sacks are used to cover the pollenized flower. It is usually a good plan to remove, or at least open, these sacks as soon as the danger from pollenization by other pollen is over. Mosquito net-

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ting sacks may be put on after the fruit has set if there is danger of birds destroying it. In pollenizing grapes, the sacks are usually left on until the fruit is picked. If sacks are left on some plants too long, the pistils will wilt and drop off. It is a good plan to take the sacks off as soon as the petals drop.

Every cross should be carefully labeled and recorded. Write name of mother plant first, and follow with name of pollen plant.

Even though one has not all the appliances for this sort of work, it is interesting to go ahead and make use of such material and knowledge as is had, and learn by a good many failures and successes how to get results.

Improvement of Garden Seeds.

G. D. BLACK, DELEGATE N. E. IOWA SOCIETY, INDEPENDENCE, IA.

As your secretary has assigned me this subject, I infer that some of you think that garden seeds are not as good as they should be. Perhaps you have been planting some of the seeds that are sent out from the Agricultural Department at Washington, or some of the same kind that are sold in the stores "two packages for a nickel." These seeds are sometimes more productive of disappointment than of good vegetables. This desire for cheapness is the greatest hindrance to improvement.

What is a garden seed? Before we can intelligently undertake the task of improvement we must know something of its component parts. If we dissect it under a powerful microscope we can readily see the young plant and may usually know by its condition whether it contains life or is dead. The largest bulk of each seed is composed of starch, oil and albumenoids, which were stored there for the purpose of feeding the young plant until it is able to obtain nourishment from the earth through its own roots.

These parts can be improved by cultivation, also by care after harvesting, and are easily understood, but the most essential part is invisible and is in a sense spiritual, as it is not composed of matter and was placed there by our all-wise Creator. We call this part "life." Each life has a character or disposition which has been forming, building and changing for many generations of plant life, and this character or disposition is transmitted to its descendants in various degrees. It is this part of the seed that will admit of the most improvement, because from the many variations we may select the best.

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Our best radishes, lettuce, spinach, etc., are those which remain good longest and produce only a small quantity of seeds. It costs more to produce an ounce of this seed and is worth more to the planter than a pound of ordinary seed. The same rule will apply to the tomato, cucumber and, in fact, nearly all vegetables except those of which the seeds are the edible part.

Judicious selection, thorough cultivation and favorable location all have a tendency toward improvement, and are the most potent agencies we can employ for this purpose.

I learned my first lesson in seed-growing nearly fifty years ago as I toddled through the garden after my mother while she placed stakes beside the best radishes, lettuce plants, etc., and cautioned me to not disturb them. She explained as best she could to my young mind that our hopes for fine vegetables in the future depended upon the seeds which these best specimens would produce. That garden had been planted with seeds brought from Ohio to the wild west, as Iowa was then known. Store seeds could not be obtained. These seeds had been improved by many years of careful selection, and probably some of them were more precious than gold, yet our neighbors were supplied from the old seed bag free of charge. It requires much experience and good judgment in making selections, as we have such a wide range of variations to select from. We can safely assert that no two plants are exactly alike in all their parts.

The seeds of commerce are not produced in this way because they would be too expensive. They are mostly grown from what is known as stock seed. During a number of years we grew several acres of tomatoes to produce seed for other firms. Our first crop was planted from stock seed bought at a high price from Livingston, the tomato specialist. We saved seeds from a few plants which were most productive and produced tomatoes which came nearest to our ideal of perfection in tomatoes, but always keeping in mind trueness to type of that particular variety. This is what we call stock seed and use for the production of future crops of seed, which will be an improvement if sufficient judgment and care has been exercised in selection.

The main crop, after carefully removing all rogues, or plants which show a radical departure from the variety, is harvested, and the quality of this seed depends upon the thoroughness of this rogueing.

I believe that more improvement can be made by careful selection than by hand-pollination for the production of new varieties. After the cross is made it requires several generations to establish the type. Most of the novelties that are introduced each season with much praise

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and price are soon drooped, while some of the old standard varieties, which by slow progression have attained their excellence by selection through many generations, are still with us.

Great quantities of tomato seed are now saved at catsup and canning factories. Many large melon growers save the seeds from their culls and small melons. Much cabbage, turnip, beet, carrot and other seeds are produced in mild climates where it is not necessary to remove the roots from the ground for winter protection, and consequently they cannot be carefully selected. Even large crops of radish seed are grown without transplanting and inspecting the roots. These seeds are furnished to the dealers very cheaply and are certainly no improvement.

In the breeding and improvement of plants we must work along the same lines as practised by our breeders of thoroughbred animals. They do not stop after selecting and breeding, but continue with careful attention and good feeding, knowing that without these essentials but little progress can be made. It is not necessary to produce argument that varieties are improved by cultivation, because it is a well-known fact that our vegetables were in their original wild state almost worthless weeds. Most of us have noticed how soon they will degenerate and revert if permitted to be self-sown and grown without cultivation for a few seasons. The radish will become somewhat like the charlock or wild mustard, which is its near relative. It is a common belief that the parsnip will become poisonous, although this idea is contradicted by some eminent physicians.

Some years ago we firmly believed that seeds grown in any certain locality were best adapted to the place where they were grown, or, in other words, we believed in home-grown seeds. We had printed in large type on the labels of the cases which we placed in the stores to be sold on commission words to that effect, and we succeeded in growing nearly all kinds, but many of them without profit.

After some years of experience we have modified our belief to some extent, and now think that seeds grown where the vegetable will reach its highest state of perfection are best with few exceptions. Our best cauliflower is grown near Puget's Sound, Wash., early cabbage on Long Island, N. Y., late cabbage in Holland, and radish in France. We believe that tomato, cucumber and most vine seeds that are grown in Iowa are as good as the best.

All seeds from which we wish to grow extra early vegetables should be grown as far north as they will properly ripen. Early sweet corn grown in Kansas for a few seasons will not be as early as that grown in Minnesota. Sugar beet seed should be grown in localities

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which produce beets containing the largest per cent of sugar. Growers on Muscatine Island produce melons from water-washed sand and rank fertilizers. These melons lack quality because the soil does not contain the elements necessary to produce sweetness and good flavor. These conditions are not favorable for the improvement of melon seeds. They have been accused of planting pumpkins in their fields for the purpose of increasing the size of their melons, by crossing them with pumpkins. Even if this cross were possible, it would only affect the seed and not the melon until the next generation.

Mr. A. K. Bush: I see a great many things to compliment in this paper. There is no doubt a profit in the seeds that can be sold for one cent a paper, but they certainly cannot be worth anything. I have no doubt that the seeds that the seedsman has discarded are fit only for chicken feed. The same is true of the Department seed. I think seedsmen will agree with me that the Department of Agriculture is in the market for the seeds they cannot sell. We use them, and as a rule we get nothing but disappointment. Good seed costs money, and it cannot be sold for one cent a paper or anything like that, and men who are large gardeners understand that they cannot use those seeds at any price in a commercial way; they cannot afford it. A quarter of a pound of cabbage seed will plant an acre. It may produce a crop worth several hundred dollars, or it may produce nothing but disappointment. The cost of the seed is a small item compared with the value of the crop. There are certain sections that produce seed of excellent quality and of the highest market value, and the buyer who gets them must pay for them, and if they are distributed by seedsmen it will build up their reputation—and the grower will be quite sure to be satisfied if he buys seed of that kind. In my opinion the home gardener is not supplied with the quality of seed he ought to have, and many of the commercial gardeners do not give this matter the attention they should. The matter of selling itself is worthy of consideration. Take the matter of new varieties. The old varieties that are well known and are established in the market, like the Holland cabbage and other vegetables, are the standard, and there is nothing in the way of novelties that will take their place. So what is the use to take the time to find something to take the place of these old standard varieties? Selection means a good deal more than the new varieties we find in many of the seed catalogs. (Applause.)

Mr. F. W. Kimball: I don't think the seeds sent out by the Department of Agriculture do any harm, because no one ever plants them. (Laughter.)

Mr. Probstfeld: If this society could put its stamp of disapproval upon the seeds sent out by the Department of Agriculture it would be doing a very good thing. For a number of years I sowed all the seed that was sent me in order to find out whether there was anything of value, and the great majority of the vegetables that grew were nothing but the most ordinary varieties, while a good many I could not find out what they were, because the seeds did not come up.

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The Possiblities of Cranberry Culture in Minnesota.

HENRY J. FRANKLIN, PH. D., ST. ANTHONY PARK.

There is a saying among Cape Cod cranberry growers to the effect that the man who has been in the cranberry business the shortest length of time knows the most about it. This may perhaps be sufficient excuse for my coming here today to tell you about the possibilities for cranberry culture in this state.

The old grower knows that the factors making for success or failure in the business of cranberry growing are many and complex, and he is often brought face to face with conditions and results which, with all his experience, he is unable to explain. There are, however, a few fundamental principles which may be laid down as being conducive to success, and it may be fairly said that, while one or another of these essentials may often be disregarded and still a considerable measure of success be attained, they all are necessary to the greatest possible success. While I have had the privilege of studying the cranberry business rather closely for nearly two years, I have not had the opportunity to study Minnesota conditions sufficiently to make a very satisfactory application of those conditions to the needs of the cranberry industry. So I will simply outline the more important principles to be followed in cranberry culture and leave it very largely to you to make your own application of Minnesota conditions, though I will make an attempt to apply them in a general way from what data I have been able to collect.

It is, first of all, essential to know where the cranberry vine will grow. This is influenced by climate, soil and water conditions. In a general way it may be said that, other things being favorable, the cranberry may be cultivated wherever it is found growing wild. A rich muck or peat bottom with soft water is required. Hard, or alkali, water in the soil are prohibitive of cranberry culture. This fact at once throws a considerable portion of the western part of the state out as a possible field for cranberry growing, but the swamps in the eastern half fulfill these conditions. It should be noted here that cranberry vines have sometimes been grown on pure sand, and have yielded a fair amount of fruit under such conditions. From this it seems just possible that if some of the mixed clay and sand swamps in the northern part of this state were properly fertilized they might make fair substitutes for the muck or peat bog. A further indication is that considerable quantities of wild cranberries are picked each year on such swamps in Itasca county.

A second requisite in cranberry culture is water supply for flowage. Water is often absolutely necessary to save a bog from winter-

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killing as well as to save the buds in the spring and the berries in the fall from frosts. For this reason a bog should be built on a stream supplying water enough to flood it in a few hours. This is found to be a prime requisite in Wisconsin, and it would certainly be a necessity in northern Minnesota. In Massachusetts and New Jersey cranberries are often cultivated without flooding the bogs at all, but the climate of those districts is much less rigorous than that of Minnesota and Wisconsin.

Harvesting the cranberry crop.

Good drainage is greatly to be desired in cranberry marshes, and is certainly one of the main things that make for the best success in raising this fruit. To be sure, they succeed in Wisconsin in growing cranberries profitably with very poor drainage and consequent unclean culture, but there is little doubt that if the Wisconsin growers would adopt eastern methods of good drainage and clean culture they would be able to raise twice as much fruit per acre as they do now.

Still another asset in cranberry growing is good coarse sand or fine gravel for sanding the bog. In Wisconsin and New Jersey, cranberry growers do not sand their bogs, but in neither of these regions do they get nearly as large crops as are obtained in Massachusetts. In Massachusetts, when a bog is first set out its surface is covered

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with a layer of sand from four to six inches deep, and later when the vines have covered the ground it is considered the best practice to sift a half inch to an inch of sand down through the vines every year.

Another matter of no little importance is the selection of vines for setting out the bog. Some vines are very prolific, while others, sometimes presumably of the same variety, bear very little fruit, though grown under the most favorable conditions. In order to make sure of getting good vines, it is necessary to get them from an old bog which has proved itself a good bearer, and it is advisable to get vines of such old standard varieties as the Early Black, Howe, McFarlin or Centerville. It is best to order such vines from well-established, reliable companies.

It has perhaps seemed to you, as I have been enumerating these conditions which make for success in cranberry growing, that this industry requires so much in the way of special conditions that it could not be made an important business in Minnesota, but you must bear in mind the fact that some of these conditions, namely sand and drainage, are dispensed with in Wisconsin, and still this fruit is grown very profitably. If, however, one were contemplating the making of a piece of marsh into a cranberry bog, I should advise him, in case he did not have all the conditions which I have mentioned in his favor, to first try out a small portion of the marsh, and then if that succeeds to plant the remainder.

While it is probable that a good share of the marsh land in Minnesota will not fulfill satisfactorily the conditions essential to successful cranberry growing, it seems certain that, with so much of this land in the state, there must be a large acreage which would make admirable cranberry bog.

According to government statistics there are over nine thousand square miles of swamp and overflowed lands in Minnesota, only four states in the Union having larger total areas of this sort of land. Much of this land may perhaps some day be made useful as the source of peat for fuel. What cannot be used in this way if used at all must be drained and be made to produce crops of one sort or another. As has been already well proved, there is no fruit or vegetable better suited to this sort of land than is the cranberry. Wherever this fruit has been grown by those who were willing to give it some study and to make a business of it, its culture has proved both very interesting and very profitable. Very many men have become wealthy from cranberry growing alone in Massachusetts and New Jersey and Wisconsin, and some are fast climbing into the millionaire class in this business. As ample evidence of the profitableness of cranberry growing in Mas-

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sachusetts are the numerous small bogs, some less than one-tenth of an acre in area, stuck in here and there wherever a man has happened to have a little patch of wet land on his farm that could be possibly made to produce cranberries. From these little patches there are all degrees in the extensiveness of the business up to the great bogs owned by the large cranberry companies, many of which are capitalized at two or three hundred thousand dollars, one of which I know being capitalized for six hundred thousand dollars.

So much for this industry from the standpoint of the individual. There is also an aspect of the matter which should appeal to all the citizens of this state as bearing directly on its prosperity. Forty years ago the marsh land in the southeastern part of Massachusetts could have been purchased for fifty cents an acre. Such land is now worth from $30 to $75 per acre, on account of its value as cranberry land. Think what a similar increase in the value of marsh lands would mean to this state as increased valuation of taxable property. As estimated, there are about fifteen thousand acres in cultivation under cranberry vines in Massachusetts. This property, together with the bog-buildings and other accessories, is worth, as conservatively estimated, $20,000,000. In Massachusetts the cranberry is grown only in the southeastern portion of the state, and in that portion cranberry cultivation leads all the industries, even far surpassing the fishing business, including the oyster industry, which is so famous. In fact, the cranberry has practically made Cape Cod, and you can judge that all the people reap a real benefit from it, not only on account of taxable capital which it provides but also because of the opportunities for labor which it gives to men and women and children. The annual output of berries from this region averages about 250,000 barrels, worth about $1,500,000—this from 15,000 acres. You can readily see from this that if only a small portion of Minnesota's 5,800,000 acres of marsh land were successfully converted into profitable cranberry bogs, it would be a very important addition to the fruit-raising industries of the state.

While the cranberry grows wild over a considerable portion of northern Europe, its culture is practiced only in North America, the main districts at present being Cape Cod in Massachusetts, central New Jersey and a region around Grand Rapids and Berlin in Wisconsin, the first of these producing about 250,000 barrels, as already stated, the second 80,000 barrels, and the third 20,000 barrels annually. Cranberries are also cultivated to a limited extent in Nova Scotia and on Long Island, New York, and new bogs were recently set in certain localities along the Pacific shore of Oregon. It is especially encourag-

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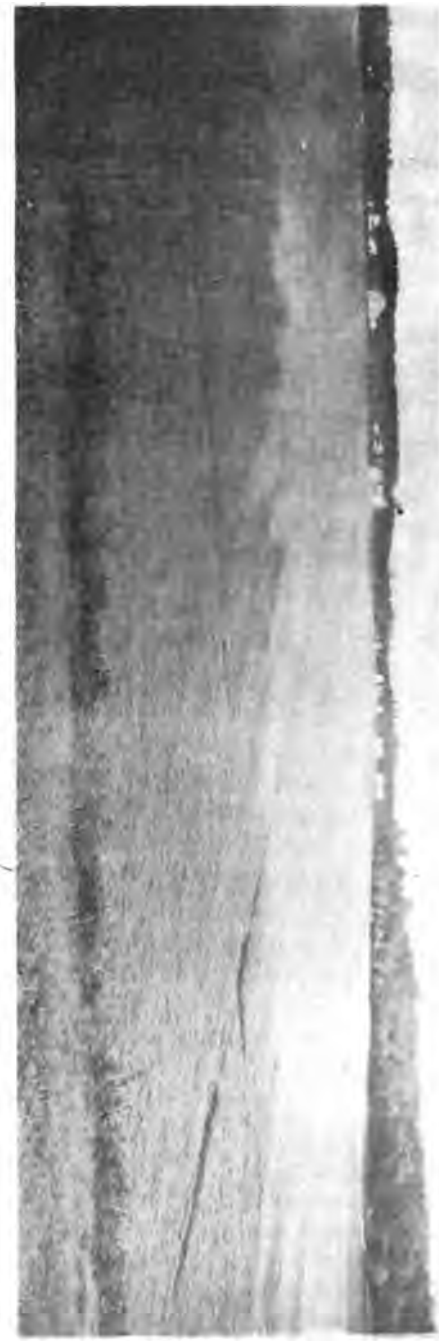
ing from the standpoint of Minnesota possibilities that cranberries are successfully cultivated in Wisconsin. It is even more encouraging to note that wild berries are picked every year in considerable quantities in Itasca county and up in the Rainy River region. It may also be of interest to you to know that Judge C. L. Lewis, of the Minnesota supreme court, is preparing a large cranberry bog in Wisconsin, about sixteen miles from the state line and about seventy-five miles north of St. Paul.

Cape Cod is the greatest cranberry growing district in the world. It is a very sandy region, and there is very little timber in it, most of the trees being scrub oaks and pitch pines. It is a country of numerous summer resorts and abundant fishing opportunities. Here and there throughout this district are numerous marshes with brooks running through them, most of which have already been made into cranberry bogs. This entire district, comprising Plymouth and Barnstable counties and a portion of Bristol county, has an area not greater than that of Hennepin county, in Minnesota. Even on little Nantucket Island, there are a number of bogs, one comprising two hundred acres.



The Wankinco cranberry bog—on Cape Cod.

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When a marsh is made into cranberry bog on Cape Cod it is often necessary to first remove a considerable growth of trees. The trees are first cut down and the trunks and branches piled in heaps, right on the bog, where they are burned. The stumps are usually blasted out afterward with dynamite; though they are sometimes pulled. With the marsh cleared of trees and underbrush, the next step is to dig the irrigation and drainage ditches. Usually one main ditch somewhere near the middle of the marsh is dug, with numerous side ditches at right angles to it, thus dividing the bog area up into sections which must vary in size according to the character of the marsh, and finally a surrounding ditch separating the bog from the upland completely, is desirable. The ditches dug, the surface of the bog must have all the turf removed. This turf is made good use of in the construction of dykes for retaining the water in flooding, and in walling up the sides of the ditches. Then the bog-surface must be leveled, the level of the water in the ditches being taken as a guide. The more nearly absolutely level a bog is, the more valuable will it prove in the long run.

When the leveling has been finished, the bog is ready to receive its coat of sand. On Cape Cod the sand banks are usually very handily located on or near the margins of the bogs, and the sand is wheeled out in wheelbarrows. It is applied to the whole bog surface to a depth of from four to six inches, and then the bog is ready for the vines. These are usually mowed from the surface of an old bog with an ordinary bush scythe and then run through a hay cutter. On Cape Cod the vines are usually set out by hand, a small iron dibble being used to push them into the sand, and they are placed from twelve to eighteen inches apart each way. In Wisconsin, however, vines are seldom set out by hand, but are strewn broadcast and are set into the peat with the aid of a heavily weighted machine.

The dykes have to be wide and substantially built, particularly to withstand freshets. On Cape Cod they are usually made wide enough to allow for a drive-way on top. These drive-ways across the marshes are very convenient where there are several bogs in succession along the same stream, as they save in carting.

From the vines thus set out, the cranberry propagates itself in the same way as does the strawberry, by sending out runners, which take root a few inches away and there form new plants, which in turn send out runners of their own. In three or four years the sand becomes well covered with vines, as represented in this view of the great Wankinco bog, located in Carver, Massachusetts, and owned by A. D. Makepeace and company. (See cut.) There are one hundred and sixty-three acres in this bog all in one piece, and the picture hardly

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gives a fair idea of the fine appearance of this splendid cranberry patch. One has to walk across it once to get a good idea of it. You may get some notion as to how poorly the camera has pictured it when I tell you that there were a number of people on the farther side of the bog picking berries at the time the photograph was taken, and they were not large enough to make any impression at all on the camera plate at the distance they were away. You will notice that on the upland on the farther side of the bog there is quite a little village.

Showing edge of cranberry bog—on Cape Cod, Mass.

There are two or three barns, a dwelling house, a store, a screenhouse capable of holding 5,000 barrels of berries, and numerous small houses for Portuguese and other help. There are only two or three bogs larger than this on Cape Cod.

The fruit of the cranberry vine is borne on stems, commonly known as uprights, which arise from the runners. There may be from one to five berries on a single upright, but the common number is two or three.

Cranberry picking was formerly done entirely by hand, but, within the past ten years, scoops or rakes have come into general use. It was once the custom to line a bog off with string into strips before

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picking in order to keep better track of the pickers, and this is still often done in case of hand picking. No hand picking is done now, however, except among very short vines. Cranberry pickers of various styles are used, but they may conveniently be placed in two general classes, viz.: the snap machines, or rat-traps, and the scoops. The snap machine is used for picking young bogs and short vines generally, and the scoops are used in the heavier, matted vines. Before the scoops came into use, it took an army of five hundred people to pick the Wankinco bog, a view of which I showed you. It now takes only thirty or forty men.

The berries are carried off from the bog in boxes. These boxes of berries are piled up in the screen house. Then they have to go through a process of screening. In this process they first go through a winnowing mill, the sound berries bounding over boards and thus being separated from decayed berries and chaff. The good berries are then run through a screen, are carefully looked over during this process by women, who pick out all bruised fruit and other objectionable matter which has passed through the winnowing mill. The berries are then ready to be barreled and placed on the market.

You will see from my account of the building of a cranberry bog that this business necessarily takes considerable capital. It costs from $200 to $700 an acre, according to the character of the land, to prepare a bog and set it out. There must be added to this the expense of keeping it weeded for the three or four years before it will come into bearing.

It may occur to you to ask if the cranberry market is not a limited one and if on that account a large increase in production would not entirely destroy the profitableness of the business. While I must admit that there would be danger of this if the production were suddenly greatly increased, I do not believe that, in the slow increase which would naturally take place, prices or profit would be made to suffer at all. It must be remembered that the population of the country is constantly increasing, and that as a natural consequence there is a constantly increasing consumption of cranberries and other fruits as well as of other products. Furthermore, almost the entire product of the cultivated bogs is at present consumed in this country. They are beginning to open up a European market which will certainly be enlarged as time goes on. Then, too, an investigator on Cape Cod, has learned how to make acceptable cranberry wine and cranberry soda syrup from the juice of the fruit, and to make up the rest of the fruit into packages similar to the "None Such" mincemeat package for pie sauce, which have found a quick sale wherever offered. Some of these packages have been sent as far as India, where they arrived in excellent condition. So you see that the whole world will some day be an open market for this healthful and luscious fruit.

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SECRETARY'S CORNER

PRESENT MEMBERSHIP OF THE SOCIETY.—The annual membership at this date, April 22nd, numbers 2661; adding to this 221 life members, brings the total present membership up to 2882. Six new life members have been added to the roll during the past month, as follows: C. C. Brink, Tracy; A. G. Loftness, Thief River Falls; Patrick H. O'Conners, Cardinal, Va; J. A. Barsness, Kenyon; L. H. Voight, Hastings; Harold S. Wilson, Monroe, N. Y.

ADDITIONAL PRINTING APPROPRIATION.—The present state legislature made an increased appropriation of $500 for each of the next two ensuing years to assist the society in the matter of the printing of its reports. The officers of the society asked for $1,000, but the pressure was so great on the appropriation committee that everything possible was cut down, and our request suffered accordingly. The limit of this appropriation, as well as the amount, will make it necessary for the society to appeal to the legislature again two years from now if the membership continues to increase at its present rate. This new appropriation will take care of the membership until then fairly well, but we shall be probably in the same situation as we have been for two or three years past, unable to furnish the members of the legislature with copies of the report, as we are required by law to do.

PLANT PREMIUMS IN 1909.—There has been an unusual demand for plant premiums this year, the applications coming in from over nine hundred members, and requiring in all between 1800 and 1900 plants, of all the various kinds offered. A list of the amount of each kind needed to fill these orders this spring will be an interesting one to study. It is as follows: 189 Beta grapes; 336 Beta grape seedlings; 800 Florence root grafts; 1116 University root grafts; 111 Gould crab seedlings; 501 plum seedlings; 303 Norway poplar cuttings; 200 Alpine currants; 288 cotoneaster; 255 pyrethrum; 426 blue spruce; 256 white spruce; 156 red cedar.

The plants delivered being as a rule small are in a sense an experiment, not only on account of the character of the plant, but also the newness of the experience in caring for and bringing to maturity plants of so small size and young an age. With reasonable care, however, they should do well and in a short time will reach a size to be of value for ornament or use, as the case may be.

LEARN TO CROSS-POLLINATE.—In this number of our monthly will be found a very clear and concise article by Mr. Cady, Prof. Green's assistant in the horticultural department at the Experiment Station, on the subject of cross-pollination, giving necessary directions, illustrated by engravings, so that any one by following them may readily understand the art and become deft in its practice. It was determined a year since to offer special prizes for apples grown from seeds secured by this process, but it was found that there was so few who had ever practiced the art, that it was thought best to postpone their offering for the present. We hope that many will take advantage of this opportunity, go into the orchard in blossoming time with the magazine in hand, and the necessary simple implements, and learn the art, even if no more than a single blossom is pollinated—and if the apple growing therefrom is saved carefully and the seed planted the results of the experiment will be of special interest. You will know the two varieties that enter into this cross and will anticipate with considerable certainty as to what the qualities of the fruit may be when the seedling tree comes into bearing. Try it this spring without fail!

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HORTICULTURE AT THE NEXT STATE FAIR.—The premium list for the next Minnesota state fair is in press and may be expected within a short time by those who were exhibitors the past year. To any others who desire a copy, it will be sent upon application to the secretary, C. N. Cosgrove, Hamline, Minn., without expense.

In the horticultural department there was offered last year for fruits $1270, for professional flowers $510, for amateur flowers $267. This list has been revised with much care, taking into consideration all of the suggestions that came in to Sec'y Latham as a result of personal correspondence. The aggregate amount has been increased very little, as the board placed the limit at last year's figures. There are, however, a few changes of some importance in the method in which the prizes are offered and their character, to which the attention of prospective exhibitors is called.

New exhibitors are needed, especially in the fruit department. Some of the old exhibitors fall out each year, and it would seem to the superintendent that new ones do not come in to fully take the place of those who retire—and, by the way, almost the only cause of retirement is the death of the exhibitor. If one becomes interested in this service it is found to be a delightful one as well as in a measure profitable, and the pleasure of being at the fair, meeting again and again in this intimate way those who are equally interested in fruit growing, proves to be almost an irresistable attraction. The exhibitors get very much out of it besides the returns in dollars and cents, which often amounts to a tidy sum, especially if pains is taken to get up a good exhibit. We hope for a number of new exhibitors this year, and Sec'y Latham, who has charge of this department again now for nearly twenty successive years, will be glad to correspond with any who would be interested to take part in the exhibit and have the matter under consideration.

NEW ENTRIES IN THE APPLE SEEDLING CONTEST.—Interest continues in this contest in which the society is offering $100 a year for seven years, the first prize to be given in 1912, for seedling apples grown from known seed according to certain conditions. If the reader is not posted as to these conditions, please note that they are to be found in brief in the little pink folder sent out by the society and in full in a circular which can be obtained of the secretary upon application.

There have been ninety-eight applications to the secretary for seed so far this year for this contest. In the previous two years since the contest was inaugurated the number of packages of seeds sent out runs up into hundreds. Twenty-six entries for competition to these prizes have been made so far this year, and in all up to this time 325 entries have been made. We anticipate a good many more this season, and there is no reason apparently why *every member* of the society who has a bit of ground should not take part in this effort to secure new and, we hope, better varieties of apples adapted to this region. A square rod of ground will grow a number of seedling trees and give you much of interest and satisfaction, even if no prize money reaches you as a result. Don't you want to take part in this interesting contest.

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GARDENS OF MR. F. H. GIBBS, ST. ANTHONY PARK—ADJOINING THE MINNESOTA STATE EXPERIMENT STATION ON THE NORTH.

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THE MINNESOTA HORTICULTURIST

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Glass as an Adjunct to Vegetable Gardening.

F. H. GIBBS, MARKET GARDENER, ST. ANTHONY PARK.

To lengthen the vegetable season, glass is an important adjunct. I will only speak of hothouses and hotbeds as I use them. The shape of the hotbed yard must depend on your location in regard to shelter, but it makes little difference whether the yard is square or oblong if it is protected from the north and west winds and has good drainage. If you can also have an east windbreak without shutting out your sunlight, so much the better. About December first we begin to gather the fresh horse manure for hotbeds, but instead of piling it, it is spread out thin over the entire yard. The second time over, roads or alleys are left every sixteen feet north and south. The manure is spread in this manner until January first, when it is about one foot thick. It can now be piled on two feet thick (making three feet in all) and allowed to heat. Snow is shoveled out of the alleys onto the manure to keep them free from ice. When one block is filled, the alleys are abandoned and are filled with hot manure from each side, which soon draws the frost out of the ground, and the beds may be put down.

We begin at the north side of the yard and pitch over from the pile enough manure to put down the first row of boxes. This clears about six feet of ground for the next row. By following this method none of the vast amount of manure has to be pitched over six feet. By having the ground all warm, one-third less manure is required than when they are put down on frozen ground. This is quite an item sometimes.

The methods followed in putting in the dirt, watering and ventilating are too familiar to all present to take up any of your time here. I start the smallest hothouse about January 1st and sow lettuce and pansies from January 7th to 10th. Succession crops of lettuce are sown every week. Lettuce is large enough to be transplanted in fourteen days. When the first house is planted full the other has been warmed and dirt prepared, so there is no delay in the transplanting. The first week in February we begin transplanting lettuce the second

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time, when the plants are given more room. They make much better plants by being transplanted twice.

Pansies are also ready to be transplanted at this time. They require only one transplanting.

The last week in February the hotbeds are ready to receive the lettuce, which by this time are large, strong plants. The room in the hothouse is refilled with plants for the second crop as fast as the first crop is removed to the beds. Care is always taken to have plenty of plants, as I would much rather have to throw away ten thousand plants than to be short five hundred.

By the last week in March the lettuce first planted is cut and sold, and the sash replanted the same day with second crop. Every sash cut before April first will raise a third crop of lettuce. Later than that the third crop is apt to come in with outdoor lettuce, and the price is too low to pay.

March fifteenth is early enough to start cucumbers for the beds. The seed is sown in boxes and plants transplanted into four-inch pots. About May first they are removed from the pots to the sash (one hill to the sash), four lettuce plants having been left out of the center for the cucumber plants. After this lettuce crop is cut, the ground is mulched with fine manure, and the cucumbers given the entire sash, which they are not slow to fill. The sash are not removed except for ventilation until the nights are warm, early in June. Given good care, cucumbers will bear until August first or tenth, when the outdoor crop is in the market, and they are too cheap to bother with.

It is well to plant some of the sash to radish about the middle of March. They get a good start early in April, when the pansies are transplanted in the cold frames to bloom. The sash can be taken from the radish and put on the pansies, so their growth will not be checked. When the radish are sold the sash are put back where the radish were, and cucumbers forced under them. As sash do not belong to a labor union, they do not object to doing double duty. When the cucumbers are done bearing, no time should be lost in pulling up the vines and piling the dirt for the next year, and as early as possible remove the rotten manure that was under the beds to the field. I like it for onion ground, as it is entirely free from weed seed.

The President: How many sash do you use?

Mr. Gibbs: I have 600.

The President: That is not a little matter. How many lettuce to a sash?

Mr. Gibbs: Six dozen; seventy-two plants.

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The President: You fill them three times?

Mr. Gibbs: If I can.

The President: Mr. Gibbs is a very successful grower of these crops, and if you want the opinion of an expert, now is the time to get your information.

Mr. Brackett: It might be of interest to know what variety Mr. Gibbs raises.

Mr. Gibbs: Anything that is good for market.

The President: Do you raise any head lettuce?

Mr. Gibbs: I have raised it, but it takes too much care. I cannot make as much as I can from other varieties.

The President: How do you get rid of lice?

Mr. Gibbs: I have had the best success with the liquid nicotine. I had some last spring, and I used liquid nicotine, which cleared them out at once. I put it on at night, and the lice had entirely disappeared the next morning; before that I had spent about ten days trying some other remedy.

The President: What variety of head lettuce did you raise?

Mr. Gibbs: The Commodore.

Mr. H. J. Baldwin: I would not like to put nicotine on and eat it.

Mr. Gibbs: We put it on at night, and eat it the next morning.

Mr. Baldwin: But you don't eat it yourself.

Mr. Gibbs: Yes, I do; I don't taste anything.

Mr. Baldwin: I would like to ask whether it is practical for anyone to put in from eight to ten dozen sash and have hotbeds to start?

The President: Mr. Gibbs has a hothouse, I understand.

Mr. Baldwin: Many of us are so situated we cannot run a hothouse. We have ten dozen sash. I have seen his place, and it is very practical, but where one has a small place you can run only a few sash. I have put in some cement pits.

The President: What is the advantage of the cement wall?

Mr. Baldwin: It does away with a frame wall; it is good for twenty years. It is a good deal better than a frame.

The President: Does it hold the heat as well?

Mr. Baldwin: Fully as well.

The President: Will it hold the sash as well?

Mr. Baldwin: I have no trouble; it works just as well. You can fill it with cabbage and celery and things of that kind and keep them in storage for later use. The mice do not trouble, and there are a great many other advantages.

Melons for Home Use and Market.—Among the most popular cantalopes for the large markets are the Montreal Market, Rocky Ford, Netted Gem, Emerald Gem and Hackensack. This last one, however, has been rapidly giving place to melons of higher quality ever since the Rocky Ford crusade, which was inaugurated in the late '90's. The varieties mentioned are not only popular because of their ready salability, but also because of their high quality they are excellent for home use.

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Annual Meeting, 1908, Northeastern Iowa Horticultural Society.

ROBERT C. WEDGE, DELEGATE, ALBERT LEA, MINN.

In the first place, I want to say that the whole meeting was a great success, and there were so many good thoughts and ideas brought out that it would be useless for me to try to bring them all into this report. So all I shall aim to do is to bring out a few points which happened to strike me most forcibly.

I missed all of the first day's sessions. In Prof. S. A. Beach's talk on "Cold Storage for Apples," he said that we should learn to take care of what we were already getting, that there was altogether too much waste, and often in the local markets apples would be sold for 35 cents per bushel one week and the next they would bring probably 95 cents, which condition was brought about by the growers putting their fruit on the market as soon as it was ripe. Apply ordinary business principles to fruit growing. Fruit growers' organizations would put growers on a more stable basis. Then, in speaking of cold storage, he brought out a point I had not ever thought of in just that way. All fruit has a natural life, and all we do by putting it in cold storage is to retard this natural ripening process. He was asked if frost hurt the keeping qualities of apples, and to this he answered: "No, not unless the frost is severe."

Wesley Greene, secretary of the Iowa State Horticultural Society, gave us a very interesting talk on "Apple Scab," and spoke of it as one of the worst enemies of the apple grower, and said that it was not known just how long the spores of the disease would live, but that a cool, moist condition was most favorable. Spores could get very well established in twenty-four hours after coming in contact with a growing leaf or apple. But the point that I took particular note of was his speaking of the spores living over mainly in the dead leaves and of cleaning up the orchard. This made me think, why wouldn't it be advisable to protect the trees with some sort of two-piece tile or cement protector, and then late in the fall or early spring let a fire run through quickly? Rev. C. H. True, of Edgewood, Iowa, says that he has had unintentional fires run through his orchard with seemingly good results. Mr. Greene was asked why one tree of a certain kind would always bear small apples while another of the same kind in the same location would bear large fruit. He said he thought in was due mainly to the root of the tree that it was grafted on.

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We heard several papers on strawberries, culture, varieties, etc. In one, by Isaac Clason, of Osage, he says that the best varieties with him are the Warfield and Senator Dunlap, and there is nothing in pedigree, but would select healthy plants. In another, by T. W. Newton, of Charles City, he says, for fruit do not raise more than two varieties. S. J. Snyder, of Osage, on best varieties of strawberries, says Snyder, Warfield and Senator Dunlap are best with him. Says he wants kinds that have grown well in ground and claims this as one of the special features of the Snyder.

Henry Slawson, of Osage, who has a five-acre orchard which has only borne two crops, says that he has realized $15 per acre for each of the ten years since the orchard was planted. How is that for an orchard which has only borne two crops?

Then we enjoyed a paper by Col. Alonzo Abernethy on "Forest Trees." He tells of how he got interested as a boy in tree planting, and then of his later experience near Huron, S. D., planting trees.

In the afternoon R. A. Schutz, of Le Roy, Minn., gave us a talk on "How to Keep the Boy on the Farm." Those of you who have heard him know it would be impossible for me to give his talk justice. Get hold of a copy of the Iowa report next year and read it. It will not do you any harm, and you will find lots in it of interest.

Whenever we go to an Iowa meeting we always hear from their "poet," as they call him, J. C. Ferris, of Hampton. It is always something good, but his "Hello, Gramp!" at this meeting was just a little the best I have heard him give.

A very good paper on landscape was given by G. W. Schmit, and then we heard from Mr. Schultz again on "The Home." He tells us that apples and flowers are a necessity.

They elected the same officers for the coming year that they had the past.

The show of fruit was excellent.

Wish I could give you more of the things we heard and learned while there. I feel more than repaid for my trip.

Growing Bush Fruits.—At a recent horticultural meeting, Supt. McIlvaine, of the Central Illinois Experiment Station, in a talk upon small fruits had this to say: "Cultivate currants until fairly well grown. Bushes may be set nearly nine hundred to the acre. To combat slugs dust the bushes with white hellebore. Plant gooseberries nine feet apart, seven feet in row. Thin the bushes to let in sun and air. Gather the fruit by putting on buckskin gloves and strip the berries and leaves together, winnowing out the leaves afterward."

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Minnesota State Rose Society, Annual Address.

MRS. D. W. C. RUFF, PRESIDENT, BALD EAGLE LAKE, MINN.

1908 has been an unusual year for our rose society as well as for unusual conditions in our gardens.

This annual meeting finds our society grown to a good size, having over one hundred paid members, more than doubling its membership of a year ago. It is out of debt, with over $100 on hand—a fine showing. The *National* Rose Society organized *twelve* years ago,

Mrs. D. W. C. Ruff, President.
Minnesota State Rose Society.

helped by liberal donations and life members, reports for the first time that their society is free from debt. We should not feel discouraged if we think perhaps we are not doing remarkable things in our work, for here is a national society, with florists mostly as members, which cannot make as good a showing as we have done.

The disagreeable part of our work is having to solicit prizes for our show, but we shall not mind this as much now we find that these

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national societies have to solicit for prizes also. If our bank account continues to grow as it is now doing, some money can be drawn from our treasury for prizes.

Several meetings have been held by us during the year, interesting papers read, and a most successful flower show held last June in the exhibition room of the St. Paul Dispatch, which surpassed all other shows held by the society, and one of *the most successful* ever held in Minnesota. Speaking of flower shows, during the year I was so fortunate as to be able to attend the National Rose Show in March, and the National Flower Show last month, both held in Chicago. Although the National Flower Show was the finest ever held in the United States, the rose show interested me most. The roses!—vases of one hundred American Beauty roses, also displays of climbing roses, the Dorothy Perkins and the Ramblers! The main feature at the November show were the chrysanthemums—the single and pompon have come into popularity; they were perfectly beautiful; some like asters, others button-shaped, and one of the kind from which the big chrysanthemums originated, about the size of the smartweed blossom.

These shows prove that the public is enthusiastic, so we must realize that this department of floriculture is as important as apple growing and strawberry planting.

As a floral society, we should encourage the use of berried plants for fall and winter effect. In Evanston, Ill., shrubs are used with telling effect—the snowberry with its white, waxy fruit, and the barberry with its cheerful red berries and beautiful bronze foliage. The grounds of private estates are planted with a thought of the public, the passersby.

I saw an article in one of our daily papers not long ago, setting forth the fact that the gardeners' and florists' clubs of the Twin Cities have appointed committees to wait upon the managers of the state fair association to urge them to raise the premium list for professionals at the state fair. We hope that this will be done, but we humbly ask that when doing this for the professionals they remember the amateurs and floral societies. The showing made by the amateurs was noteworthy and helped make Horticultural Hall attractive. It is just as hard for amateurs to make a good display—it means work for them. They are not working just for glory—but the spirit of making the fair a success is greater with them, for the business proposition is not considered.

We cannot expect the horticultural society to do for floriculture what the Massachusetts Horticultural Society has done, give monthly shows, sweet pea shows, etc., but we hope that they will give every help possible to encourage the growing of peonies, so that we shall have collections large enough to secure the national peony show for our state. We also urge the society to offer every inducement possible to make the summer meeting a flower show on a large scale, which will draw the public, and have notices published of it, so not only the members will come, but outsiders who hardly feel like coming into the work but might do so if fired with enthusiasm by such an exhibit.

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AUXILIARY SOCIETIES.

Annual Report, 1908, Minnesota State Rose Society.

MRS. F. H. GIBBS, SECRETARY, ST. ANTHONY PARK.

The fifth annual meeting of the Minnesota State Rose Society was held in the First Unitarian Church, Minneapolis, December 3, 1908. The following officers were elected: President, Mrs. D. W. C. Ruff, St. Paul; vice-president, Mrs. John Hawkins, Minneapolis; treasurer, Mr. John Hawkins, Minneapolis; secretary, Mrs. F. H. Gibbs, St. Anthony Park; executive committee: Mrs. Henry A. Boardman, three years; Mr. F. W. Bell, two years; Mrs. J. F. Fairfax, one year. This society consisted in 1908 of 104 members in good standing.

The mid-winter meeting of the Minnesota State Rose Society was held at 137 Western avenue, St. Paul, Mrs. D. W. C. Ruff, president, presiding.

Program: Song, "Roses in June," Mrs. Elenor Fletcher, St. Louis Park; song, "Little Dutch Garden," Mrs. Elenor Fletcher, St. Louis Park; "Outline Plans of St. Paul Dispatch," Miss Bailey, St. Paul; "Packing Flowers for Exhibition," Mr. Olson, of Holm & Olson. St. Paul; "Asters," F. F. Farrar, White Bear; "Biennials," Mrs. D. W. C. Ruff, St. Paul.

The Annual Flower Show was held in the exhibition room of the St. Paul Dispatch building, St. Paul, June 30, 1908. The hall was filled to overflowing with beautiful flowers; there were 228 entries and 26 contestants. It was without doubt the largest and best flower show ever held in Minnesota. Over 500 people visited the show during the afternoon and evening. Much credit is due the Dispatch for their generosity, doing everything in their power to make the show a success.

The society also had a very creditable display at the state fair. There were exhibited beautiful roses, dahlias, gladioli and all other flowers in bloom at that time.

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Annual Report, 1908, North Dakota State Horticultural Society.

O. O. CHURCHILL, SECRETARY, AGRICULTURAL COLLEGE, N. D.

The past season was a very prosperous one for the society, and I am convinced that much good was accomplished. The interest is steadily growing, and indications are that it will continue to grow even more rapidly in the future than it has in the past. A few new life

O. O. Churchill, Agricultural College, N. D.
Secretary, North Dakota State Horticultural Society.

members have been added to the life membership. The annual membership has reached nearly two hundred. At the present writing more people have sent in their fees for the coming year than the entire membership in the society the year previous to my being secretary. The growth in membership from seven to nearly two hundred in two years' time indicates the increasing popularity of the society.

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The work can never be expanded and put on as firm a basis as it should be until state aid is secured. The membership fees are not sufficient to carry on the necessary work. We are looking for an appropriation at the coming meeting of the state legislature.

The North Dakota Society is handicapped by not having members whose chief income is secured from horticultural work. Horticulture is a side issue in this state. I do not think there are any outside of the nurserymen who depend upon horticulture for their income. We cannot expect to develop a strong horticultural society while this condition remains. With the present condition it is practically impossible to create enough interest in the members so that they will rejoin from year to year. New membership has to be secured each year, and for this reason we are working to give the novice information which will be of the greatest benefit to him. Common cultural methods, etc., are the most useful information that can be furnished.

If the same members could be secured from year to year we could have our work develop correspondingly. As it is, however, the new members usually desire the same pieces of information as was given the members in previous years.

Our annual meeting was held January 19 to 22, inclusive. By holding it in connection with the Grain Growers' Convention, the program is presented to from twelve to fifteen hundred people, while if we held it by ourselves there would only be a small per cent of this number present. The work is not limited to the membership. I am happy to say that the horticultural program provokes more discussion and is usually the best received of any given during the meeting.

Spraying for Perfect Fruit.—I have used the dust spray on thirty acres of orchards for the past five years. The orchards are now eight to eleven years old. I sprayed from four to seven times, owing to weather conditions. I use lime, sal bordeaux or copper sulphate, paris green and flowers of sulphur, ¼ to ¾ lbs. per tree, owing to size. Two men with a hand machine or a spring wagon can spray 100 to 120 ten to twelve-year old trees per hour at about one-half the cost of liquid spray. The spray should be used while the foliage is damp early in morning and late in evening when we have clear weather, but on cloudy, damp days I can spray all day. I usually have about 2% of wormy apples, but made special effort the past season and had less than .05% injured by worms. My apples this year run less than four bbls of culls to the hundred, which included those with black or round rot, a little bitter rot, bruises and bird pecks. —G. T. L., Ark.

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Annual Meeting, 1908, Kandiyohi County Horticultural Society.

C. C. SELVIG, SECRETARY, WILLMAR, MINN.

This meeting was held in Willmar, Minn., November 28, 1908. Meeting opened at 10 a. m., Pres. P. H. Frye in the chair.

The minutes of the previous meeting were read and approved.

Report of the committee appointed at the last meeting to wait on the county commissioners to endeavor to get them to appropriate $400 to defray the expenses of having an exhibit at the state fair from Kandiyohi county was read by Mr. C. C. Selvig, who stated that upon the advise of the county attorney the county commissioners declined the request of the committee on the ground that the clause of the act did not apply to Kandiyohi county.

After general discussion on various matters of interest to the members, the meeting adjourned at 12:15 p. m. for lunch, which was provided at the Delmonico Cafe.

Meeting was resumed at 1:15 p. m., when the following papers prepared by the members were read: "Strawberry Culture," John Ahlstrom; "Top-grafting and Working," John Wicklund; "Tomatoes," F. W. Powell; "Picking and Marketing Apples for the Local Market," P. H. Frye; "Pruning Trees," C. C. Selvig. These papers were of great interest to the members present and produced a lively discussion, all thoroughly enjoying the subjects presented.

The executive committee reported on the audit of the accounts of the secretary for the last year, and same were accepted as read.

The election of officers for the year 1909 was then proceeded with, the following being the list of those elected: President, P. H. Frye; vice-president, John Ahlstrom; secretary and treasurer, C. C. Selvig; executive board, S. J. Walgren, E. R. Rasmusson, John Kleberg; legislative committee, P. H. Frye, C. C. Selvig, F. W. Powell; delegate to annual meeting of state association, John Kleberg; alternate to annual meeting of state association, S. J. Walgren.

After discussion, it was moved and seconded that a summer meeting be held some time toward the end of June, when the strawberries are in prime condition, on the farm of Mr. S. J. Walgren, who extended a hearty invitation to all the members to come and accept his hospitality at that time.

The question of having the annual meeting some time earlier in the season, when it would be possible to have an exhibition of fruit, flowers, etc., and so make it more attractive to the members, was then

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taken up, and after considerable discussion it was found that the majority were in favor of the scheme, and also that an exhibition of poultry, vegetables, grains, etc., be included in the program. The following committee was then appointed to take charge of this and to see how such an exhibition would find favor with the merchants of the city of Willmar and other parties interested: J. B. Bjornberg, Russell Spicer and Dr. J. M. Rains. This committee to make their report at the summer meeting of the association.

The hour getting late, and many of the members having a long journey to make before reaching home, it was decided to adjourn, and one of the most succeesful meetings of the Kandiyohi County Horticultural Society came to an end, all present feeling that they had spent a most profitable day and had gained some extra bit of knowledge that would help them in their great endeavor to bring before the world the fact that Minnesota, and Kandyohi county in particular, were to be the greatest fruit and vegetable growing state and county in the Union.

Annual Report, 1908, Northeastern Minnesota Horticultural Society.

J. KIMBALL, DELEGATE, DULUTH, MINN.

While in attendance on the meetings of the State Horticultural Society, in December, 1907, the value and importance of the work being done by that society and its auxiliaries so impressed itself on the mind of one of its members, Rev. J. Kimball, of Duluth, that, after consulting with Sec. Latham, he concluded that an auxiliary society ought to be organized for the northeastern part of the state.

The men of Duluth and vicinity readily responded to such a movement. After securing the promise of Pres. Green to be present and address a meeting, Sec. H. V. Eva, of the Commercial Club, of Duluth, completed the arrangements for the first meeting.

Accordingly, on June 11, 1908, a meeting was held in the rooms of the Commercial Club. After an address by Pres. Green, of the state society, a constitution was adopted and the following officers chosen; J. Kimball, president; C. P. Craig, vice-president; A. C. Jones, treasurer; A. B. Hostetter, secretary; John G. Williams, B. C. Church, Mrs. Wm. A. Cant, executive committee.

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The Fascination of Amateur Bee-Keeping.

REV. J. KIMBALL, DULUTH.

In treating this subject we wish to consider the amateur as a learner or student of bee culture who has had little or no experience, in distinction from the professional, or bee-keeper of long experience, who "knows it all"—or thinks he does—or who, by long experience has lost much of the charm enkindled in the discovery of new phenomena.

Placing the hive for the swarm, which is seen above in the tree.

To a few of the students of nature the history of the honey bee has ever been a most interesting pastime. The blind Huber, by the aid of his wife and a young companion, became so charmed in his investigations that he was able to reveal to the world things misunderstood and unknown, and the correctness of his discoveries have stood the test of more than a century of time.

To read about the bees, their habits and their work is indeed deeply interesting, but to observe the busy insects on different occasions and watch their movements as they go in and out the hive is an attraction which enkindles a strong desire to look within their home and to understand more about these industrious and skillful little workers.

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Such a multitude of busybodies as compose one colony, living and working in harmony, all contributing in the development of one plan with unselfish zeal, each having the same end in view—the common good of all—is indeed marvelous.

The amateur bee-keeper is perhaps first interested in observing the bees in the fields as they fly from one flower to another, reaching down quickly among the stamens and petals, sucking the sweet nectar from which they produce the delicious honey; or, as they gather the pollen and stuff their baskets full, while the bursting anthers dust their wings and sides until they become tinted with their delicate hue.

The bee-keeper approaches the hive and observes the lively creatures as they come out on a bright summer morning, while the dew is on the grass and flowers. He notices that the bee on its first departure from the hive flies upward and then around the hive, each time describing a larger circle, until a tangent becomes "a bee line" to some spot where it hopes to find the food it covets.

In the middle of the day, when the sun shines bright and warm, the amateur observes bees flying up and down in front of the hive, and he discovers with delight that these are young bees trying their wings and developing muscle for the long flights they will in a few days take in search of pollen and honey. The loud buzz of the drones, too, he hears at this time, as they are sporting in the air near the hive. The home-coming bees are also noticed flying slowly, because heavily loaded with nectar gathered from many flowers, perhaps two or three miles distant. Now and then one of them stops to rest in sight of the hive, too weary to enter it. It alights to rest perhaps on the bare hand of the bee-keeper. It has no thought of stinging and if unmolested will soon fly on to reach the hive.

The amateur soon learns that at the entrance of each hive there are sentinels on guard ready to attack any infruder who comes too near. It is a charming sight to watch two or three of them rush at a huge bumble bee that attempts to enter the hive. The little Italian bees will pull and push at the giant bee until they get him near the edge of the alighting board, when again he forces himself near the entrance. This calls out a larger force, and the intruder, defeated in his purpose of robbing, flies away.

The student bee-keeper is not long content to watch his bees on the outside of the hive. Some charm arouses his curiosity to look within and to learn, if possible, some of the secrets of the home life of the bees and the governing forces of such a wonderful community. There is, indeed, a mysterious influence effectively controlling this well

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organized colony of busy workers not yet understood by the advanced students of agriculture. At one time it was thought the colony was governed by a "king bee," and Virgil, Pliny and others wrote concerning such a royal personage. After that error was dispelled by Huber, it was claimed for a time that the mother queen was the real ruler in the hive. But this theory, too, lacks proof, and the mysterious governing force is still unsolved.

The amateur is wise who dons a veil and gloves before he raises the cover of the hive to look within—also in selecting a sunny day

Ready to shake the swarm down into the hive. Look out for music!

while the older bees are absent from the hive. The young bees do not resent this intrusion like the older bees and will come up between the frames and timidly take a look and, perhaps, return, too busy to take further notice.

It is said that the young bees feed and care for the young larvae and are, therefore, called "nurse bees," and are also comb builders before they become honey and pollen gatherers.

The inside of the hive shows eight or more frames in which the bees have built their combs. Those next to the outside may be filled

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with honey. On lifting out of the hive the second frame, partially covered with bees, along the top and ends is noticed cells filled with honey sealed over. The other cells are occupied by the young larvae of the worker bees, except a cluster of layer cells near the bottom of the frame, that are the drone bee larvae.

Another frame is then raised out of the hive resembling the first, only near the bottom of it may be seen two or more queen cells not fully developed yet filled with royal jelly, the essential food for the larvae queen.

Now, by turning the frame over the mother queen may be seen moving about among the bees as only a natural queen can. She charms the beholder. He may reach down and pick her up with his fingers. She will not sting him. She walks about over his hand trustfully, as though its warmth was an assurance of safety. She commands respect and admiration. Is she not the mother of the 20,000 or more bees in her hive? She can lay 3,000 eggs in one day, Prof Cook says, nearly double her own weight. She is fed the most nutritious food by her attendants, who have previously digested it for her. She is safer than any royal sovereign who will not eat until his food is tasted for him.

As the bee-keeper walks among his hives he will sometimes hear a peculiar piping sound, the note of a young queen just emerging from her cell. Soon it is followed by a quacking sound from the old queen. A duel may soon follow unless a large number of the bees swarm out of the hive with the mother queen to find and to build for themselves another home, leaving to the young queen and the younger bees the old hive with its combs, its brood and its stores of honey.

In Locating an Orchard the subject of air drainage deserves equal consideration. Any one having occasion to ride across country in the spring or fall will notice a marked change in the temperature as he passes over the ridges. Here the air is warm and dry, and as you drop into the valley beyond it feels damp and chilly. In other words, the warm air being lighter is found in high places, while the cold air being denser seeks the lower lands. The lowlands are always subject to heavier frost, and in many instances the higher ground escapes the late frosts entirely. This air drainage also affects the presence or absence of fungous diseases of all kinds in a vital way. Moisture is the first requisite for their multiplication and growth; hence by planting in the draws or lower places we provide favorable conditions for their growth. On the other hand, any condition which tends to maintain a dry atmosphere has a very marked effect in checking the multiplication and spread of these fungous foes.

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The Plant-Breeder's Auxiliary, Annual Address.

J. M. UNDERWOOD, PRESIDENT, LAKE CITY, MINN.

Two years ago when we organized the Plant-Breeders' Auxiliary to the Horticultural Society, I had four objects in mind:

First. To encourage the explorers for new fruits to continue in the good work and keep an alert eye open for any improvement in the chance seedlings that they might find over what we now have, either in hardiness or long keeping qualities, particularly of the apple.

Second. The practical breeding of new varieties by hand-pollination, for we know that experimenters along this line of work have obtained very valuable results.

Third. The planting of trees of certain varieties in proximity but in isolated places, to allow them to cross-fertilize each other and thus obtain results similar to that of hand-pollination, though not so positive and certain.

Fourth. The keeping of a record book that shall faithfully record the origin and description of all new and valuable contributions to our horticulture, so that we as well as future generations may have a reliable record to refer to.

There will doubtless be a good many varieties of fruits and flowers, trees and shrubs, that will prove of but little value and perhaps be discarded by propagators. They could be so designated in our records, and it would be of value to know what varieties to avoid as well as what to plant.

Credit should be given this auxiliary society for initiating the movement which resulted in the securing of a plant-breeding farm, under the management of the department of horticulture of our agricultural school; and if it should do nothing more it has accomplished enough in this to entitle it to "a niche in the temple of fame," for on this farm we shall expect definite results from cross-fertilizing the most desirable varieties of flowers, shrubs, shade and evergreen trees, as well as growing from seed new and better varieties of fruit, and especially of the apple.

Do not, however, depend entirely on this farm. Let every member of this society save apple seeds of the hardiest and best apples, plant them and grow the trees into bearing. If you will start the habit at your table of saving the seeds of the Wealthy and other hardy kinds of apples, you will find that every member of the family will join with you, and you will soon have a fine lot of seeds to plant. These can be sown in a shallow box of earth and kept in the kitchen

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or living room near a window. They should be covered an eighth of an inch deep, and the ground kept from drying out but not too wet. In May when the ground is warm transplant the little trees into rows six inches apart in the row, cultivate well and grow them into trees for two years; then transplant them into rows eight feet apart and eight feet in the row, where they can remain to come into bearing. In the meantime you can cut back the first year's growth and top-work it into some orchard trees and so hasten the fruiting, and by this way determine if any of the seedlings are of value. And you will surely get something of value, enough to pay for your labor; besides, the pleasure of the work will give zest and interest that will doubly repay you, and you may discover a variety that will secure the grand $1,000 prize!

A Department for Fungous Diseases.

PROF. E. M. FREEMAN, BOTANIST AND PLANT PATHOLOGIST, ST. ANTHONY PARK, MINN.

The Minnesota Experiment Station has established a new division of "Botany and Plant Pathology." Some of you may not be aware of its existence, and undoubtedly still more of you are not aware of the scope of its work. As head of this new division, I am particularly desirous that it shall not be merely ornamental—if it is even ornamental—but that it shall be primarily useful to the state. We want to earn our salaries, and we propose to do it. Our ambition is not to tag long Latin names on every defenseless plant that gets into our hands and tc let it go at that—our object is:

First—To learn and help you to learn all we can about the plants you raise; to study them from the life history side and to know all about how they grow and how they grow best; in short, all of their habits, peculiarities, whims and ways in the botanical sense.

Second—We want to learn all about the troubles of Minnesota plants, and, of course, when I say Minnesota plants I mean especially the horticultural and agricultural plants of Minnesota. We do not want to trespass on the field of the entomologist, as he, of course, continues as heretofore to handle all the insect troubles of your plants. Our field is one which has not been occupied in this state and deals with the fungous diseases, such as rust, smut, leaf spots, blights and mildews. Especially do we want to know how to prevent these and how practical methods of prevention can be devised and used. The

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department is new. We know a few things about these troubles, but there are many—a great many—we do not know. We are going to find these out if we get half a chance, *but* (and I wish here to point out the chief object of this note) we cannot do much of practical value without your assistance. There are many things you know that we do not know; there are some things we know that you do not know. We must combine our knowledge and work together. I wish most emphatically to solicit your co-operation in this work. If you have any diseases in your plants, let us know about them. We shall do all in our power to help you prevent such diseases. We hope you will tell us your experiences, whether you have successfully or unsuccessfully fought these diseases. We hope to dig deep and to study hard in thoroughly understanding them, but the final test of our work is up to you. Any method must be useful to *you in your orchards and fields.*

We want you to tell us when our recommendations are successful and when they are not, and we want you to suggest better if you can, for I assure you we never hope to have a monopolistic corner on disease information; but we do want a free circulation, both outward from this station and inward to it. Of course, we shall make some mistakes—any man who doesn't isn't doing much that counts. We are going to remedy them if we see them. You can help us to see them.

Let me summarize in brief my message: The field of this new department is, first, the study of the habits and all other botanical features of your plants; second, the study and cure of the fungous pests attacking your plants. We want to help you, and we want you to help us. We invite you to ask us for what we know, and to tell us what you know about these diseases. If we know, we will tell you gladly, and if we do not know we will try hard to find out, so that we can tell you.

Referring to Failures in Fruit Growing in Wisconsin, Professor Sandsten attributed most unsuccessful experiences to the following causes: Lack of proper orchard management and soil, planting poor varieties, setting trees too close together, and selection of a wrong type of trees. In conclusion he emphasized that what is needed in orcharding today is an application of the fundamental truths rather than conducting experiments and discussions on subjects that have only a secondary bearing upon practice. "We have accumulated facts and performed experiments enough to enable any intelligent person to start in commercial fruit growing in the state," he said in closing. "What is needed today is an application of what we really know rather than branching out after new things."

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Fruits for Minnesota Planting.

List adopted by the Minnesota State Horticultural Society, December 3, 1908, for the guidance of planters in Minnesota:

APPLES.

Of the first degree of hardiness: Duchess, Hibernal, Patten's Greening, Okabena.

Of the second degree of hardiness: Wealthy, Malinda, Anisim, Iowa Beauty, University.

Most profitable varieties for commercial planting in Minnesota: Wealthy, Duchess, Patten's Greening, Okabena, Anisim.

Varieties for trial: Salome, Eastman, Yellow Sweet, Milwaukee, Newell's, Lowland Raspberry, Jewell's Winter, Gilbert, Evelyn, Windsor Chief.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent, Longfield, Northwestern Greening, Charlamoff, Peerless, Tetofsky.

CRABS AND HYBRIDS.

For general cultivation: Florence, Whitney, Early Strawberry, Minnesota, Sweet Russet, Transcendent.

Varieties for trial: Faribault, Shields.

PLUMS.

For general cultivation: DeSoto, Surprise, Forest Garden, Wolf (freestone), Wyant, Stoddard.

Most promising for trial: New Ulm, Brittlewood, Compass Cherry, Terry.

GRAPES.

First degree of hardiness: Beta, Janesville.

Second degree of hardiness: Moore's Early, Brighton, Delaware, Worden, Agawam, Concord, Moore's Diamond.

RASPBERRIES.

Red varieties: King, Turner, Miller, Loudon, Minnetonka Ironclad.

Black and purple varieties: Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder, Eldorado.

CURRANTS.

Red Dutch, White Grape, Victoria, Long Bunch Holland, North Star, Pomona, Red Cross, Perfection, London Market.

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GOOSEBERRIES.

Houghton, Downing, Champion, Pearl, Carrie.

STRAWBERRIES.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Glen Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, sand cherry, buffalo berry, high bush cranberry.

Mr. H. F. Busse: Why was the Lyman's Prolific taken off the list?

Mr. Andrews: It is the sense of the committee that it is not giving good satisfaction on account of not getting any fruit.

The President: It has rusted a good deal.

Mr. Busse: At my place it has not rusted at all and has borne more during the past three years than any other variety.

Capt. A. H. Reed: Why are there so few crabs of any kind on the trial list? What do you mean by "worthy of trial"?

Mr. Andrews: There used to be a demand for crabs, but the last three years the dealers have called for large apples instead of crabs, and it is not necessary to carry so many crabs on the list.

Mr. Wyman Elliot: The way I understand the matter is this, that unless a variety is propagated and so has been generally distributed and can be purchased in almost any nursery, it is not put on the list for trial. Last year we tried to put on a good variety, but they brought up the argument that it could not be obtained in large quantities from any nursery, and therefore it would not be wise to recommend it for trial. As soon as it has been widely distributed and nurserymen have taken hold of its propagation, it will be put on the list. There are many varieties of seedlings that are worthy of being put on the trial list, but they will have to wait until they are more generally propagated. Mr. Philips has several varieties which should go on the trial list, but they have not been generally enough distributed so that he would permit them to go on.

Mr. J. L. Teigland: Is the Virginia worthy to remain on the list for propagation? The Virginia produces as much fruit as the Martha, and the Martha produces as much fruit as a cottonwood, and I move therefore that the Virginia be stricken from the list.

Mr. Andrews: We have a Virginia that we get quite a number of apples from.

Mr. F. W. Kimball: I don't think in the last few years I have got a barrel of apples from all the Virginia I had.

Mr. A. B. Coleman: My Virginia has not borne for the last four years. They are not doing anything. The tree is looking healthy and strong, but it is not bearing any apples.

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Mr. Elliot: Out at my nephew's we have something like 100 Virginia that were planted some eleven or twelve years ago, and I don't think from the entire number of trees he has ever realized over three or four barrels in a year. They are very shy bearers.

Mr. Teigland's motion, having been duly seconded, was put to a vote, and prevailed.

Mr. Busse: I have raised the Virginia crab perhaps as long as anybody, and they used to bear good crops of fine fruit. There was no scab on the apples as we have nowadays, but I think the last three or four years it has been affected the same as the Martha crab; it has leaf blight and scab, and is a shy bearer. We never got anything out of the Martha crab to amount to anything. I think the Martha crab is the tree that has the greatest influence in distributing leaf blight and scab among the Virginia crabs. I think we can raise the Virginia if we cut out the Martha.

Mr. C. E. Older: Is there any crab now perfectly satisfactory?

Mr. Busse: Yes, I think the Lyman's Prolific. (Laughter.)

Mr. E. A. Smith: Has any one ever had the Picket's Prolific? We have several in our orchard, and they bear a full crop.

Capt. Reed: I am perfectly satisfied with the Strawberry crab. I had trees of only nine years' growth that this year brought a full crop, and they are very satisfactory.

Mr. Older: Does Mr. Brackett know anything about a crab on Mr. Lyman's place called the No. 4?

Mr. A. Brackett: I don't think we have any really good crab that is satisfactory all over the Northwest. I know Lyman's Prolific has been one of the best crabs we had. We have in the last few years had a great many varieties of crab that have not had sufficient leaf, and for that reason the sun would spoil the fruit. If we get a dry year we are going to have crabs that will be very satisfactory. Mr. Lyman raised some very fine ones this year of the kind the gentlemen mentioned.

The Killing of Weeds by means of spraying with various compounds is not a new proposition, but until recently it has never been very successfully demonstrated. For a number of years Prof. L. H. Bolley, of North Dakota experiment station, has been working with this problem and in a recent bulletin gives the results of his very successful demonstrations. He shows that it is quite easily possible to go into the small grain fields of the northwest and with his spraying machine kill out the much dreaded mustard, Canada thistle, what is called in that region king head and in most regions ragweed, sow thistle, corn cockle, chickweed, dandelion, bindweed, plantain, cocklebur and a few others, without any injury to the grain growing in the field. He demonstrates this to his own satisfaction in experiments on the station grounds and a large number of co-operative experiments with farmers throughout the state. The testimony of these farmers is included in the bulletin and the work has been widespread and very thoroughly done.

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Summer Work at Itasca State Park.

CARL HAMILTON, MINN. SCHOOL OF AGRI., ST. ANTHONY PARK.

It is impossible for me to give you a description of Itasca Park. I do not claim to be an artist nor an orator, and I shall only attempt to give you an intelligible idea of what a summer's work in the park under the State Forestry School may be. I think I justly assume your interest in any state institution, and I may even call upon this interest to balance my limited power of presentation.

Itasca Park—a tract of timberland 22,000 acres in extent, situated in Clearwater, Hubbard and Becker counties, some thirty-five miles southwest of Bemidji—was establishing by act of legislature, in 1891, for the purpose of preserving in a natural condition the headwaters of the Mississippi. In the center of the park lies Itasca Lake—spread

Burnt-over land in Itasca State Park.

in three narrow arms over the woodland country—fed by numerous streams and flowing northward as the infant Mississippi.

About fifty million feet of virgin pine are standing in the park, rising in places from the water's edge. Here and there a tamarack swamp shows up in light green contrast to the darker green of the white and Norway pines. A cedar swamp occupies the valley of Boutwell creek on the west arm, and it is here that the beavers have accomplished some of their most interesting engineering feats—interesting enough, in fact, to allure two of the camp outfit (under Prof. Lange, of St. Paul) into spending one whole night rolled up on a small clump of moss for the sole purpose of watching the animals in their work of repairing a break in the dam. The night was cold, and the only excitement an occasional "splash" from the night watchman as he went his round of inspection. There was "nothing doing."

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In 1907 the legislature placed the park under the State Forestry Board as a state forest reserve, and permitted the Board of Regents of the University to use it as a demonstration ground for the State Forestry School. The situation is ideal for such a purpose, and although the appropriation was small the system was given its start last summer. It was a first attempt—an experiment in part, yet a most successful one, and has served to show the possibilities of such a system.

The Forest School is situated at the Old Park House (originally erected for the park superintendent), on the north arm of Lake Itasca. It is on the main road, twenty-eight miles from Park Rapids, and is

Dining hall at Itasca Summer School.
44x20 feet. Cost of Building and Furniture about $200.

reached by a daily stage running to Itasca P. O., one mile farther north. The object of the school is, in brief, to give practical work in forestry and woodcraft, and to give opportunity for the study of the interesting and instructive forest conditions of the lake states.

On the 30th of June the camp was made. A large mess hall had already been equipped, and a line of twelve 9x9 wall tents was formed along the lake shore. Each tent was provided with a board floor and cots, and these, together with what a little ingenuity could produce, made living quite comfortable in spite of the regular diet of beans, corn, tomatoes and fish. At 6:30 on July 1st a crude gang of some eighteen men—gathered together from various institutions and repre-

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senting several states—rolled out for work. I think I am safe in saying that the gang was crude. Naturally they were not all foresters from the start, and it is not even surprising that one of the number—now a forest ranger, by the way—should have made himself very unpopular by an innocent attack, with a short stick, upon one of the most dangerous animals the park contains—a skunk.

As regards the actual work accomplished in camp, I shall tire you with only a brief outline. Three half days of every week were spent in surveying under Prof. Stewart, particular attention being given to a forester's needs. The field work began with practice in pacing and chaining. Then came the running of compass lines, the retracing of boundaries and the location of corners. Some practice was given in plane table mapping, and a map of the camp was made in connection. Topographical mapping and preliminary survey methods were employed, and, in addition, some general practice was given in the use of the level, transit and stadia. The party was divided up into several crews, and it was thus possible, by rotation, to give each man some practice in every step of the work from chaining to running the instrument.

In the lecture room the system of United States land survey was taken up, triangulation was studied, and the legal status of a surveyor discussed.

Alternating with surveying, mensuration, under Prof. Cheyney, took up one-half of the remaining three days of each week, and this, too, consisted largely of field work. In the first place, practice was given in the use of the cruiser's compass, and preliminary lines were run. It is not until a man finds himself lost in the midst of a tamarack swamp at four o'clock in the afternoon, with no dinner (yet bloody from mosquito combats), and finds, too, that his compass needle has stuck, that he begins to feel desperate—and such experiences we had to meet. Cruising methods were taken up following this. Estimation by observation was attempted; the strip method of valuation survey, that is, the calipering of all trees on strips representing a certain per cent of the total tract, was practiced; the sample plot method was tried; and these finally checked by an accurate system of measuring each tree on the tract. Several "forties" were cruised, and by means of volume tables giving the B. M. contents for average trees in each diameter class, valuations were set. The crew consisted usually of four men. The tract was run in bounded strips; two men manipulated the calipers and called the diameter measurement at breast height to a tally man, while the fourth man ran the compass and cut the lines.

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Stem analysis, consisting of a series of measurements and observations upon felled trees to determine their growth and life history, was carried on with the object of getting at the basis of yield tables and of comparing the actual and market cord. The tables, of course, are all formed from averages of a number of experiments, and in the same locality are fairly accurate.

On the scientific side, too, work was done. Scientific forestry was studied, and as far as possible was practiced in nursery culture

Interior of dining hall.

and thinnings. Experiments were started on the poplar thickets, and each man given practice in arm as well as head work. In the nursery, experiments were tried in germination and in the protection of the beds against the invasion of birds, squirrels, mice and the damping-off fungus. As an example, it was found that the only effective protection of the bed against birds and mice was a one-inch wire mesh, set six inches below the surface of the ground and covering a frame one foot high. For "damping-off," sanding of the bed and a high

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brush screen, allowing free circulation of air, were most effective.

Of the time remaining, two half days each week were given over to botany, taxonomical studies and the recognition of species. Two weeks' work in entomology consisted primarily in the classification of common insects with some attention to forest pests.

The total cost of the summer's work at the Forest School was as follows:

Rent of tent for season (shared usually by two men)	$5.00
Board per week, $4.00; for six weeks	24.00
Railroad and stage fare from Minneapolis and return	12.00
Tuition fee	5.00
Incidentals	4.00
Total	$50.00

The camp was under regulations, and, in fact, it was the policy to make good camp men as well as foresters.

But to give exclusive attention to one side of the summer's expedition would be unfair, for there was, besides the work, a vacation worth remembering. It is needless to say that a crowd of eighteen men, living together and working with similar interests, must have some good times. Now add to that the fact that we were in the midst of a good timber country, full of game (even though it was only good to look at), full of picturesque trails and lakes—and consider, too, that we were provided with a canoe, rowboats and a gallant old tub for a sailboat. Think how we scalped the town of Mallard in a baseball game on "the Glorious Fourth"! Think of those expeditions on the lakes, those fishing trips, those camp fires! and *then* ask yourself, did we have a good time? In short, from the first gong until the fire died out in the evening, every one was occupied. It was a vacation full of instruction, experience and pleasure.

But before leaving you, I wish to say just a few words in regard to the Itasca Summer School proposition in general. In the first place, it is the only system by which the student can put in practice and see in operation the principles of true forestry. In the second place, a familiarity with the forest conditions of this and the other lake states is impressed upon him, and, thirdly, the training in camp life is in itself valuable in that it fits each man to take up the more serious camp duties after graduation. Last summer was only a *start;* we expect better things in the future. There can be no question that Minnesota has exceptional opportunities for forestry instruction, and such a school is surely worthy of the support of every loyal Minnesotan.

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Outdoor Roses and How to Grow Them.

E. MEYER, MINNEAPOLIS.

ROSE GROWER FOR MINNEAPOLIS PARK BOARD.

When the amateur rose grower has made up his or her mind to have a rose bed or a small rose garden, the first thing to do is to locate it—and, if possible, give it the best place in the garden. It should be somewhat sheltered, but not shaded, and away from the interference of roots of trees. To find out the number of plants required for the available space, the following rules may be followed: hybrid remontants, 2½ ft. apart; hybrid teas, 2 ft.; and dwarf roses for borders, 1½ ft. apart.

For a rose bed of one color and one variety, I would recommend the hybrid tea rose, "Gruss an Teplitz," as the best in every respect. For a mixed bed of hybrid teas additional good ones are: Kaiserin Augusta Victoria, Caroline Testout, Maman Cochet (white and pink), Mildred Grant, Etoile de France, Liberty, La France, etc. In hybrid remontants I consider the best to be: Mrs. John Laing, Alfred Colomb, Baron de Bonstetten, Tom Wood, Mrs. R. G. S. Crawford, Paul Neyron, Ulrich Brunner, Clio, Marshall P. Wilder, Frau Karl Druschki, Jubilee, Margaret Dickson, Fisher Holmes, Gen. Jacqueminot, Heinrich Schultheis, Marie Bauman, Mabel Morison, Prince Camille de Rohan, Louis van Houtte, Perfection des Blanches and many others. Detailed descriptions of above named varieties may be found in any rose catalog, and it would be wasting time to describe each individual rose here.

When you have selected your list of varieties, place your order with a reliable rose grower or nurseryman for spring delivery. In the meantime prepare the bed if the ground is frost free.

Roses, especially the hybrid remontants, thrive best in heavy loam. If such is not available, some porous clay should be mixed with the soil, and where the subsoil consists of clear sand a layer of clay should be placed in the bottom of the bed at a depth of two and one-half to three feet. Do not use blue or other brick clay but porous clay, as mentioned above. This will permit water to penetrate slowly and prevent dissolved manure from passing to a depth out of reach of the roots. On top of the clay put a layer of three-fourths inch of cow manure and fill up with the prepared soil, and the bed is ready to receive the roses. The reason for putting the manure so deep is to prevent the roots from coming in direct contact with it, yet they are within easy reach of it.

The roses should be unpacked immediately upon arrival, and if for some reason they cannot be planted at once they should be "heeled

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in" and watered. It is well to prune the roses before planting and cut back to sound wood any ends of roots that are damaged or black. Budded plants generally have a stub at the union of stock and scion which ought to be cut off to prevent decay. All canes in excess of three or four to a plant should be removed at the base, and the remaining canes cut back. There should only be in all three or four eyes above the surface, and the top eyes ought to be on the outside of the cane, so as to form an open head and prevent the shoots from growing into each other.

In planting roses be sure to dig the hole large enough to prevent the roots from being crowded and the ends from sticking upwards. On budded plants the union should be three inches below the surface when the bed is leveled off. Plants on their own roots should be planted one inch deeper than they were before.

In order to be able to give them plenty of water, leave a depression around the plants, which should be filled with water a couple of times to wash the soil between the roots and make it firm around them. If the whole bed is planted it may be leveled off some, but leave a depression around the plant till after the second or third watering. If it is already late in the season they may be shaded for a few days with flower pots or anything handy, to prevent the wood from drying out until root action starts. A few sprinklings every day will answer the same purpose. In fact this should be kept up all summer during dry weather, but as soon as the leaves are out the watering should only be done after sundown and very light, just enough to moisten the leaves.

The beds should be cultivated twice a week and watered whenever necessary. To find out the proper time for watering, dig up some soil from a depth of eight or ten inches, and if it feels soggy in squeezing it postpone watering until the soil is dryer. Too much watering is just as bad or worse than not enough, and much blackspot comes from overwatering.

Roses are much bothered with insects, of which the green fly is the most common. To get rid of it spray your roses with tobacco water, soap water or nicotine, diluted as per directions for green fly. Applications ought to be made on a cloudy day or after sundown, and then syringe off in the morning. For red spider, syringe the afflicted plants a few times a day until they disappear. Rose chafer, or rose bug, and leaf roller should be hand-picked. Against mildew, bordeaux mixture is the best remedy, although it stains the leaves badly. A good

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preventive measure against insect pests is to keep the plants in a growing and thrifty condition.

When real hot weather sets in, about the middle of June, mulching is more beneficial than cultivating. Horse manure is good, but cow manure is better, but it should be at least one year old. With every watering some of the manure will dissolve and be carried down to the roots. The plant being somewhat established by this time, it can stand a little feeding, but such mulching put on directly after planting might injure it. Outside of a stirring up or two during the summer, there is no cultivating to be done, and towards the end of August all cultivating and watering should be stopped, so as to prevent further growth and give the wood a chance to ripen. The more seasoned the wood, the better it will withstand the severe winter of our northern climate. The weeds that come up may easily be pulled from the mulched ground.

During the first summer there will not be many flowers and should some of the weak plants bring forth any buds they ought to be picked off, and on strong plants only a very limited number should be left. Late in the season the buds may be left to bloom without injuring the plants, and only the petals that are ready to drop have to be picked along with bugs and worms. Flowers ought not to be cut the first year, or at least a very limited number, in order to leave all the wood—and even the hips should be left. Cutting tends to stimulate growth at a time when it is not desired.

Proper protection so as not to lose any during winter claims our attention next. As soon as freezing weather is expected, the plants should be tied together and hilled up with soil to a height of about six or eight inches. An additional precaution is to wrap them with tar paper in order to keep away the mice, but the best remedy against this pest is to let the ground freeze about four inches before putting on any additional covering. Leaves, horse manure or litter may be used for this purpose. Leaves are best, but care must be taken to prevent the wind from blowing them away. For hybrid teas an additional covering of boards or tar paper will help to keep the leaves dry. Treated in this manner, there is not much danger of losing any.

In the spring, as soon as danger of too much thawing and freezing is past, the covering should be removed to give the hills a chance to thaw out and be leveled off. Now is the time to prune them again, but they can support more eyes now, and three or four on each cane of a hybrid remontant, and four to six on a hybrid tea, are not too

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many. Weak wood or crossing branches ought to be cut out. After the pruning, put on a two-inch layer of cow manure and dig it in with a spading fork.

The care during the summer does not differ much from the first year, except that any amount of flowers may be cut without injuring the plants. On the contrary it stimulates growth, and that is what we want now. The faded flowers should be cut off, leaving only two good eyes on the stub, out of which one or two other flowers will come later on. This little pruning during the summer will assure us more flowers and a more continuous flowering season, as the blooms are not so apt to come in crops. Owing to the fact that the plant will get a much earlier start the second year, it will spend most of its energy early in the season, and there will not be much danger of too late a growth.

There is much dispute about the merits of roses on their own roots and budded stock. For my part I prefer budded. It is true that they require more care, but they repay it. There is no doubt that a weak grower is more vigorous when budded than otherwise, and a budded rose as it grows older will always retain a better appearance. The plant stays where it is planted, but the own root rose is apt to die in the middle, and the eyes in the ground will send their shoots in all directions, and in four or five years the plant has here a branch and there a branch coming out of the ground, and where it ought to be is a vacant spot. The budded plants will sometimes send up so-called suckers, but a close observer can always distinguish them from the real thing. They should be cut off smooth at the roots where they come out. Roots that form on the scion of the budded rose ought to be removed to keep the stock in a working condition.

A big mistake is made in watering roses every day the same as a lawn. That's just what induces those top roots to form, which will start to supply the plant, and the stock will die for lack of exercise. When the roses need watering give them good and plenty and then wait until they need it again. When sprinkling just moisten the foliage and keep the surface soil rather dry.

The right kind of fertilizer must be used in order to keep a rose bed in good condition for a number of years. Besides cow manure, an application of wood ashes, and at another time ground bone, will keep the soil in its prime, and with proper pruning the plants will produce a larger quantity and better quality of blooms each year.

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Mr. Meyer: I have confined myself to hybrids and didn't say anything about the climbers or dwarf roses, but as time was limited I thought it would make the paper too long. I extend to all the ladies and gentlemen on behalf of Mr. Wirth, the superintendent of parks, a cordial invitation to come out and see our rose garden. Of course at present there is nothing attractive in the way of roses, but in the summer, in June, when roses are at their best, we would like to have you come out to see what we can do in the way of rose growing in Minnesota. (Applause.)

Mr. Geo. J. Kellogg, (Wis.): I wish you would tell us how to get rid of the aphis.

Mr. Meyer: Soap water or nicotine will do very well. Nicotine you can buy at any seed store, and the directions are on the package.

Mr. Kellogg: I have tried everything but nicotine.

Mr. Meyer: When you sprinkle them in the evening the aphis will all be gone in the morning. For the red spider there is not much to be done except to sprinkle with pure water. Pure water put on two or three times a day with all the force that can be had, and put on under the leaves, is about the best and only way to get rid of the red spider—and you will have to get rid of them, or they will get over the whole bed. The leaf roller you will have to pick off by hand; I don't know of any other way to get rid of that. It is the same way with the rose bugs. I have not met many here, but in the east where I used to work the rose bushes were very thickly infested with them, most generally white roses. There were hundreds of bugs on a bush, in fact so thick that they could be picked off by the handful. We picked them and threw them in water or put them in the fire. We are not bothered much here by that pest, and it is a good thing we are not.

Mr. J. P. Brown: Tell us about the Coresca.

Mr. Meyer: It is in every respect the same as any other, only it climbs. It is the same as the Kaiserin Augusta Victoria and all hybrid climbers, only not so very hardy. You can always protect a low growing plant better than a climber.

Mr. Brown: Don't they produce more flowers?

Mr. Meyer: A big plant will produce more flowers than a small one.

Mr. Brown: Don't you think that the blossom is in a little better shape, that the Climbing Augusta is a little better than the Bush Augusta.

Mr. Meyer: No, sir, the less the plant blooms, the better shape the bloom is in.

Mr. Brown: It is a little more pointed.

Mr. Meyer: Yes, it is a little more so.

Mr. Brown: How much do you prune back the roses, the second year they come into blossom?

Mr. Meyer: I always cut them back to three or four eyes.

Mr. Brown: But during the summer?

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Mr. Meyer: Oh yes, cut back every stem down to two eyes.

Mr. Brown: During the summer?

Mr. Meyer: Yes, during the summer, cut them back to two good eyes; where the stem comes out, there are always two that are no good, and I never count those.

Mr. Brown: Don't you hurt the bush by taking off so many leaves in summer?

Mr. Meyer: No, the less flowers there are on a bush the better they are.

Mrs. F. H. Gibbs: We are always trimming our rose bushes to get good flowers. It is always much better for the trimming back, and we get more flowers. If we want large flowers, we must trim the bushes.

Mr. Meyer: There are more roses that we have not talked about. The wild prairie rose is one of the best, and our nurserymen ought to grow more of that kind of shrubbery than they now do. There is no shrub that can compare with our wild prairie rose for single specimens. You can see single specimens of plants five or six feet high that have a spread of four or five feet. Single roses are really one of the finest bushes you can see, and they ought to be grown more than they are. In the fall they are covered with bright red berries which hang on until Christmas or later, sometimes until spring.

Judge L. R. Moyer: Our wild roses are troubled with leaf rust. Out our way some of the roses are affected with red leaf rust, and in winter it comes out as black patches on the stem.

Mr. Meyer: They are troubled to some extent here, but not as much as the roses are in the east.

Prof. F. L. Washburn: Do you use soap in water for roses?

Mr. Meyer: Yes, that is one of our remedies.

Prof. Washburn: It is very good, and it is not injurious to the bushes.

Mr. Meyer: Still it is a good idea to syringe it off in the morning, because there is fat in the soap, and that stays on the leaves and stops up the pores in the stems, and the pores are the lungs of the plant. They have to breathe through the pores, and if you stop them up you stop their growth.

Prof. Washburn: I am not in the soap business, but if you use Ivory soap it will not hurt the plant; it is strong enough to kill the lice, but it contains no fat that will injure the foliage.

Mr. J. M. Underwood: Can you protect tea roses successfully?

Mr. Meyer: Oh, yes, but we have to put on enough covering.

Col. C. W. Gurney, (S. D.): I would like to inquire about a little white rose, it is generally called the Norway rose, but I do not see it on the lists of any florists. It is pure white and has an intensely thorny stem like the yellow rose.

Mr. Meyer: Is it double?

Col. Gurney: Not extremely so, but it is a double flower. It is much like the Plantier.

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Mr. Meyer: That is the Lucida Alba; that is a white one.

Mr. Philips: About how much protection do you give tea roses in winter?

Mr. Meyer: Two or three feet of leaves put on as dry as you can.

Mr. Philips: Will not straw do?

Mr. Meyer: Oh, yes.

Mr. Philips: I would hate to cover a couple of hundred bushes with three feet.

Mr. Meyer: A covering of two or three feet of leaves is not so much. You take a blanket and put the leaves in it, and you can carry from ten to twelve cubic feet in it at the time.

Mrs. Ruff: How early do you put on your protection?

Mr. Meyer: You have to hill up the roses before the ground freezes, and you had better wait until you have got frost in the ground to keep the mice out, for they cannot work well in the ground when there are three or four inches of frost.

Mrs. Ruff: You hill the ground and cover completely?

Mr. Meyer: Yes, six or eight inches.

Mr. Underwood: Do you cover the leaves?

Mr. Meyer: It is a good plan to use tar paper to shed the water.

Mr. Underwood: How many winters have you wintered roses?

Mr. Meyer: Here just one winter, but in Connecticut I have wintered some two or three seasons. The first winter after planting is the most difficult to protect them; they make a very late growth; they do not start to grow much before June, and they grow when they really ought to stop.

Mr. J. F. Benjamin: Would it not do to cover roses with earth the same as raspberries?

Mr. Meyer: Oh, yes; in the old country we cover them with earth and do not put anything else on, but the climate is much better for roses there than it is here.

Mr. Underwood: Just one word on the matter of covering. The reason I asked the gentleman how many winters he had covered roses in this state is because this important feature we continually overlook. I think they must be kept dry, at least that is our experience, and we have wintered roses for a great number of years. We start in with them as soon as we commence putting down blackberries, and we have settled down to the one idea that they must be kept dry. We use new tar paper, but boards are equally good, or you can use whatever is most convenient to put on top of the straw or leaves, just so they are kept dry. It seems to me this is very essential.

Mr. Benjamin: What I am going to tell you happened a little over a year ago. I asked a man why his roses bloomed so freely, and he said he covered them with leaves and straw and then put on lots of water, and they continued so through the winter. I never saw so many roses in my life as that man had. (Laughter.)

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IN MEMORIAM

John S. Parks.

Passed February 19, 1909, aged 74 years.

The death of this aged pioneer occurred at his home in Amboy, Minn., Friday, February 19, at 5:30 p. m., after an illness of many months, although he was confined to the house but a short time. The

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cause of his death was dropsy. No man was ever more patient and less exacting in his trying and lingering dissolution than Mr. Parks.

John S. Parks was born in Canada, near the Vermont line, in 1835. When quite young the family moved to Clinton county, N. Y., where he grew to manhood. At the age of twenty-two his father died, and, being the eldest son, the charge of the entire family fell upon him, and to that task he devoted himself with that energy and preseverance that characterized his whole life.

When he was about twenty-six years of age he came west, and, being familiar with lumbering, struck for the pineries of Wisconsin, on the Wolf River, where his skill, industry and sobriety were quickly recognized, and he was soon foreman of a large crew. He spent about two years at that work, but his ambition was to have a farm, and, hearing much about the resources and fertility of the soil of Blue Earth county, Minn., in 1863 he selected a homestead in the township of Pleasant Mound, where he resided until about four years ago, when he moved into the neighboring village.

In 1864 he was married to Miss Helen M. Cray, sister of Loren and Nelson Cray, of Mankato.

The natural bent of Mr. Parks' mind found full vent on his farm and in the community, and he became an intelligent and progressive farmer and a recognized leader in all township and county affairs. He was the first clerk of the township, which office he held for many years. He also held other town offices, and for thirty-six years was postmaster of the Pleasant Mounds postoffice, or up to the time it was discontinued. The prominent characteristic of the subject of this sketch was his desire to be of help and benefit to his neighbors and to scatter flowers in the pathway of his fellowmen. His cheerful, helpful life, his devotion to his wife and family and his kindness to everybody, will long linger as a fragrant memory in the home and in the minds of all who knew him.

Mr. Parks was a keen observer and a great reader and kept well posted on the current events of the day. In horticultural work he took great delight and on his farm grew the greatest variety of fruits in the county. His reputation as a fruit grower was not confined to the county but extended to the entire state.

He selected the seed from which the Wolf River apple grew, and there are still growing on his place at Pleasant Mounds trees which were grafted with scions taken from the original tree, which long since died. In his orchard are to be found the oldest trees of this kind living. His interest in fruit growing lead him to raise a great many varieties

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of seedling apples, numbering several hundred, and he had also in the line of his experiment work a large assortment of forest and ornamental trees, shrubs and flowers. His interest in this direction brought him an appointment as superintendent of trial station by the State Horticultural Society, which he conducted at his home place for many years with eminent success.

Mr. Parks became a member of the State Horticultural Society at an early day and continued his membership up to the time of his death. He was a regular attendant at its meetings and found a place on the program as occasion offered, always ready to serve the society at any time and in any way where he could be of use. His large acquaintance in the society resulting from this relationship mourn his passing, and none more so than the writer of this article.

The deceased is survived by his wife and five sons, three sisters and two brothers, one of whom, W. S. Parks, of Amboy, has been also for some time a member of this society.—Secy.

Act well your part while yet 'tis called today.
Be of good cheer; be happy while you may.
Keep pure your heart, for highest good aspire.
Look toward the light, and seek the upward way.

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SUMMER MEETING
OF THE
Minnesota State Horticultural Society, 1909.
To be held Tuesday, June 29th.

After due consideration it has been decided to again hold the regular summer gathering of this society at the State Experiment Station, at St. Anthony Park, (*in Armory Hall*) and the time is set for this meeting at as near a date as can be arrived at as likely to meet the strawberry season at its best in that vicinity.

PREMIUMS.

As will be noted on the next page, the premium list has been revised and considerably changed and enlarged from previous years, and especially in the premiums offered for flowers, and it is hoped that every person attending who has anything to contribute to this exhibit will do so. The premiums offered aggregate nearly $200, and ought to bring out a splendid show of fruit and flowers.

DINNER.

Instead of the regular picnic dinner which has been held now for so many years it has been decided to have a dinner prepared in the regular dining hall of the Experiment Station, which will be served at *the low price of twenty-five cents each* to members or their friends *who secure tickets* of Sec'y. Latham *prior to June 22nd.* Remittances can be made by mail and tickets will be returned through the same medium, or they can be secured personally in the office of the secretary. These tickets will call for reserved seats.

Dinner will be served to others than as above at the uniform price of thirty-five cents as far as they can be accommodated, which will only be, however, for a very limited number, so that members are urged to make their arrangements in regard to the tickets beforehand.

Parties who desire to picnic about the grounds are of course at liberty to do so as heretofore, but no provision will be made for furnishing coffee or anything else in connection therewith, and it is hoped that all attending will arrange to dine together as provided above.

The menu will comprise strawberries in various forms, and you may be sure of getting your moneys worth. Dinner will be served at 12:30 p. m.

Any present who are not members of the society may become such for the current year by the payment of $1.00, annual fee, to Secretary Latham, or $10.00 for a life membership.

THE AFTERNOON SESSION will begin at 2 o'clock and end at 3:30. It will be in large measure an impromptu program and, to some degree at least, in the nature of object lessons with the fruits and flowers exhibited at the meeting. A lively and helpful time may be expected. A question box will be provided for any who would like to take advantage of this method of securing information.

HOW TO REACH THE GROUNDS.

Take the Como-Harriet or Como-Hopkins car, either in St. Paul or Minneapolis, and get off at Commonwealth Avenue, where carriages will be found waiting to carry the visitors to the grounds, one-half mile distant, from 9:30 A. M. to 1:30 P. M.

SAMUEL B. GREEN, President,
St. Anthony Park.

A. W. LATHAM, Secretary,
207 Kasota Block, Minneapolis.

ENTRIES.

All entries must be in the hands of the secretary not later than Saturday, June 26. *No entries can be received at the meeting.*

The size to which the exhibition made at the summer meeting has grown makes it impracticable for entries to be received on the day of the meeting, the necessary clerical work connected with these entries requiring considerably more time than is then to be had. Exhibitors are urged to *send lists of their entries* to the secretary *at as early a date as possible*, and under no circumstances later than the date noted above. *Entry blanks* for this purpose *will be furnished* by the secretary *upon application.*

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PREMIUM LIST.

All exhibits must be in place and properly labeled by 11:30 a. m. to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the the articles exhibited.

Fruits and flowers shown become the property of the association.

N. B.—At the afternoon session exhibitors, in all classes, may be called upon to talk about the articles exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

PEONIES.

	1st prem.	2nd prem.	3rd prem.	4th prem.
Vase of Festiva Maxima 10 blooms	$2.00	$1.50	$1.00	.50
" " light pink "	"	"	"	"
" " dark " "	"	"	"	"
" " white "	"	"	"	"
" " red "	"	"	"	"

	1st prem.	2nd prem.	3rd prem.	4th prem.
Collection—six blooms of each.... variety, in separate vases....	$8.00	$6.00	$4.00	$2.00
Seedling peony—six blooms.....	3.00	2.00	1.00	.50

PERENNIAL FLOWERS.

	1st prem.	2nd prem.	3rd prem.	4th prem.
Vase of Oriental poppies.	$2.00	$1.50	$1.00	.50
" " Iceland "	"	"	"	"
" " iris	"	"	"	"
" " delphinium	"	"	"	"
" " mixed herbaceous perennials	"	"	"	"
" " " annuals	"	"	"	"

OUT-DOOR ROSES.

	1st prem.	2nd prem.	3rd prem.	4th prem.
Collection—five blooms of each variety, shown in separate vase.....	$6.00	$5.00	$4.00	$2.00
Three named varieties—white—five.. blooms each, in separate vases...	2.00	1.50	1.00	.50
" named varieties—pink five .... blooms each, in separate vases...	"	"	"	"
" named varieties—red—five..... blooms each, in separate vases...	"	"	"	"
Collection of Rugosa and Rugosa Hybrids, five blooms each, in separate vases.....	3.00	2.00	1.50	1.00

The following named varieties of roses to be entered separately and shown in separate vases.

Prince Camille DeRohan, General Jacqueminot, Margaret Dickson, M. P. Wilder, Jules Margottin, Magna Charta, Paul Neyron, Madam Gabriel Luizet, Baroness Rothschild, Anna De Diesbach, Ulrich Brunner, John Hopper, Rosa Rugosa (pink and white), Baron de Bonstetten, Madam Plantier:

Each—1st prem., 75 cents; 2nd prem., 50 cents; 3rd prem., 25 cents.

STRAWBERRIES.

One quart of *each variety*, to be shown on plate, *not in box*.

Collection (not less than six varieties):

1st prem., $5.00; 2nd prem., $4.00; 3rd prem., $3.00

Collection of three named varieties..... " 3.00; " 2.00; " 1.00

The following varieties of strawberries to be entered separately:

Bederwood, Dunlap, Crescent, Splendid, Clyde, Warfield, Lovett, Enhance, Glen Mary, Haverland.

Each, 1st prem., $1.00; 2nd 75 cents; 3rd 50 cents; 4th 25 cents.

Any named variety not included in above list:

1st prem., $2.00; 2nd $1.00; 3rd 50 cents.

Seedling, originated by exhibitor:

1st prem. $3.00; 2nd $2.00; 3rd $1.00.

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SECRETARY'S CORNER

Don't miss notice of Summer Meeting on preceding page.
Don't miss remitting to secretary for dinner tickets.
Don't miss getting a share of the premiums offered.
Don't miss being there!

Maintenance of State Fruit-Breeding Farm.—The legislature made no change in the amount appropriated for the maintenance of the fruit-breeding farm, $3.000 per annum, the same as last year, being the regular permanent appropriation for this purpose. Besides this, the salary of the superintendent is taken care of out of another fund without drawing from the state treasury, for this purpose.

Set Type in the First Report.—Mr. T. J. Catlin, of Waukenabo, Minn., in a recent letter states that he was setting type at the time the first report of this society was printed, and more than any other person assisted in setting up the type for this first volume of our report in 1872 or 1873. This is interesting information, and we took pleasure in sending him a copy of that report for which he is asking.

Kenney's Tree Protector.—Mr. Kenney reports that not a tree protected by his device (described in a previous number of this monthly) was injured by the rabbits or mice below the point where the protection begins, but as the snow was in some cases deeper than the height of the protector, twenty inches, branches above that point were eaten off by the rabbits in some cases. Old trees not having this protection wintered all right, as the rabbits seemed not to like the old bark. Mr. Kenney says if he had used burlap above the twenty inch tree protectors it would have been an additional protection.

A Wild Seedling Raspberry for Testing.—Mr. C. S. Ketchum, of Brookpark, Minn., sent to the State Fruit-Breeding Farm, through this office, a bundle of plants of a wild raspberry that he has been cultivating for several years and considers of special value. Members who have similar plants of new varieties, either wild or originated in the garden, are urged to send samples to the State Fruit-Breeding Farm for a similar purpose. They may be sent direct to the superintendent of the farm, Chas. Haralson, at Excelsior, Minn., who will receive and care for them and report on them duly. In this way members may assist materially in developing the purposes of this experimental farm.

The Minnesota Forest School, at Itasca State Park.—This school, which is located for practical work in forestry in Itasca State Park, opened about May 1st, with the senior and junior classes in the University Forestry Course in attendance, the senior class to remain there until the commencement at the University in June, when they will graduate from the full course, the junior class to remain during the summer and until the first of September.

The regular summer forest school will begin July 1st, running through a month. A large attendance is expected, and a full corps of professors and assistants, covering all branches of learning even remotely connected with the science and art of forestry. As the life at Itasca Park is practically that of an encampment the occasion is one looked forward to with great interest by all concerned, and certainly for practical purposes in learning the art of forestry no course could be devised likely to bring better results.

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CAPT. A. H. REED AND HIS GRANDSON INSPECTING HIS ROW OF YOUNG HIBERNAL APPLE TREES ON HIS EXPERIMENTAL GROUNDS, AT GLENCOE, MINN.

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THE MINNESOTA HORTICULTURIST

Vol. 37. JULY, 1909. No. 7.

TRIAL STATIONS

Midsummer Reports, 1909

Central Trial Station, St. Anthony Park.

PROF. S. B. GREEN, SUPT.

The backward weather, about which so much complaint was made early in the season, has proven favorable to most of our horticultural crops, and in the middle of June we find the outlook for these crops unusually good. The foliage was never more perfect nor the outlook for fruit of various kinds better than it is today. The losses from winter-killing have been very slight, and there is every indication that this will be a banner year for the Minnesota horticulturist. Insects and diseases, as yet, have done little damage, owing probably to the fact that vegetation has pushed along so rapidly that there has been little chance for them to spread.

Not only is the outlook promising for our fruit and garden crops, but ornamental plants are in most excellent condition. The early flowering ones have given us an abundance of bloom, and the outlook now is for a wonderful show of peonies and other plants that flower late in June.

At University Farm we are extending our work with potatoes, which we are caring for in even a more elaborate way than last year. We are also paying special attention to market gardeners' crops.

At the fruit farm, the seed from the crossed strawberries and crossed raspberries that were raised the past winter has started, and the plants have been once transplanted. There are about thirty thousand of these now ready to go into the open ground. The seedling strawberries that were planted for trial last year have produced a good show of bloom, and the outlook is for interesting results this season. Five thousand seedlings of the Beta grape have been planted out this year for fruiting. There have also been planted out large

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quantities of plum and apple seedlings. It is interesting to note that quite a number of the Japanese plums crossed with the American sorts at Lake City have come through the past winter in good condition.

CROSSING STRAWBERRIES AT THE FRUIT-BREEDING FARM.

The blossoms on all these pots of strawberries have been hand-crossed and each fruit labeled with names of varieties in each cross as shown. This work has been done the past winter at the State Fruit-Breeding Farm. The seeds from the crossed fruits will be planted to grow new varieties.

This year for the first time we have had the junior and senior classes in forestry in Itasca Park, and under the present plan the junior and senior classes are required to put in two seasons in practical forestry work. They thoroughly enjoy the study of forestry in the forest and gain much valuable experience. I am confident that young men of this kind are going to have a very decided influence upon the forest wealth of this state and country.

Collegeville Trial Station.

REV. JOHN B. KATZNER, SUPT.

At this time of the year I am not expected to write a complete report showing the work done in detail at the station, but to give in a general way the present status and the prospects for this year's fruit crop.

With this idea in my mind I went over the grounds on June 1st, to see what might be of interest to the members of the society. The orchard looks most beautiful. It is now in full bloom, nothing but blossoms and blossoms as we pass by the single trees. In fact, our orchard blooms this year as never before. Some trees are exceptionally full of blossoms, as the Hibernal, Patten's Greening and Patten's Nos. 112, 108 and 109. Besides these the Duchess and Wealthy and, of the crab variety, the Virginia, Shields, Whitney and

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some Transcendents deserve special mention. There are many others that show up well, but the above are the best. Plums are not blooming so well as in former years; the trees are getting too old. Cherries show only a few flowers. Well, we never got any cherries anyway, so it makes no difference if they bloom or not.

The strawberries look thrifty and healthy. No plants were killed last winter. At present they are growing very fast, and it will be but a few days till they are in bloom. There might be more plants in some places, but on account of the drought last year the strawberries did not grow vigorously, nor did they set so many plants.

Hibernal trees in bloom at the Collegeville Trial Station.

The currants too, are rather old bushes and have done better in the past. Accordingly only a fair yield is expected. New currant plants have already been started to take the place of the old ones. Last year we planted a gooseberry tree, the Tryumphante. It will give us a few berries this season. It is side-grafted about five feet high on some hardy but unknown stock

Nothing can be said about grapes as yet, but the vines are backward and have to get busy if they want to give us some ripe fruit this fall, for the season is so far advanced and so very short.

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In this latitude of late springs it is really a fine thing to have a few hotbeds in which early vegetables and plants can be raised under glass. Our beds were started about March 1st, and since Easter we are having lettuce and radishes. Every farmer ought to have a hotbed for early vegetables. The work in making one does not amount to much, and it comes in at a time when other work is not so urgent. At present the gardeners are busy sowing and planting large fields of vegetables. We need a lot of garden truck at the school and find it most economical to raise it ourselves.

The nursery is well stocked with young trees, and the stock is growing now very rapidly. In fact, everything is doing well at present, and the outlook is very promising.

Our florist has been busy for several weeks replanting our large flower beds on the lawn about the buildings with flowers and foliage plants to beautify the place with floral designs. Meanwhile large beds of tulips of many colors are still in full bloom and grace the approach of the institution.

Glencoe Trial Station.

A. H. REED, SUPT.

At this writing, June 14th, the prospect for a fruit crop was never better in McLeod county than at present. Both apple and plum trees blossomed very full, and the fruit has set well, as no frosts or heavy rains have prevailed to injure it.

Strawberries have been in full blossom the past week, and a good yield is evident. Last season I set one thousand Senator Dunlap's and five hundred of the Clyde variety alongside in five rows. The Clydes were much the stronger plants when set, a bunch of 25 being twice as large as one of the Dunlaps, and they grew much more vigorously during the season of 1908. While treated the same, covered lightly with straw during winter, I find eighty per cent of the Clydes winter-killed while most of the Dunlaps came through all right and are well matted. I notice those vines set on ground slanting to the south have matted much heavier than those on ground slanting to the north or northeast and bid fair for a much greater yield of berries this season.

In April, 1905, I received from Secretary Latham for trial a dozen apple trees with the following instructions: "The twelve trees (sent you) budded on Pyrus baccata, to which reference has been made heretofore, being sent you for experimental purposes, will reach you in a day or two. They consist of two Charlmoff, two Wealthy,

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two Duchess, three Hibernals and three Patten's Greenings. We are expecting to secure some very definite results from this experiment, the value of which depends almost entirely upon the compliance with these instructions.

"*Conditions* to be observed in planting and caring for Pyrus baccata budded trees, twelve in number, sent to each trial station of the Minn. State Horticultural Society, spring of 1905.

"1. Plant not less than sixteen feet apart and deep enough so that when the ground is settled they will stand one or two inches deeper than they stood in the nursery.

"2. Cut back so they will branch to form a head not higher than two feet from the ground and do no severe pruning thereafter.

"3. Give the ground good cultivation throughout the entire season and do not mulch at all.

"4. Number and keep record of each tree, showing year of first blossoming and of first fruitage, etc., etc."

Trees duly received and set on favored ground twenty feet apart and instructions followed as near as possible during season of 1905 and 1906. June 19th, first year, I discovered one Charlmoff dying, and Aug. 15 it was dead. The other eleven made about twelve inches in growth.

Season of 1906, made the following record, No. 1, Patten's Greening, killed; No. 2, growth, two feet; No. 3, growth, 18 inches; No. 4, Hibernal, growth, 18 inches; No. 5, growth 2 feet from where headed off; No. 6, died second year in June; No. 7, Charlamoff, growth, 4 feet high from ground, mice girdled; No. 8, dead and gone; No. 9, Wealthy, 4 feet high, branched and thrifty; No. 10, ditto; No. 11, Duchess, dead and gone second season, no cause; No. 12, thrifty, 4 feet high second season.

Made no report and kept none for the season of 1907, as condition was so bad of each and every tree, and I found all dead in spring of 1908, while trees set at nearly the same time in rows twenty feet each side, grown from root grafts, have lived and thrived, some of which are bearing apples this season. I am seriously of the opinion that budding or grafting standard apples on Pyrus baccata stock is *no good*.

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Hendrum Trial Station.

OLE J. HAGEN, SUPT.

In order to get a full understanding of a report of this kind and the circumstances that surround the growing of the different varieties, I think shall have to go back as far as 1907, because in that fall we had an immense amount of rain that deluged this vicinity (Red River Valley) and kept the land under water for months. The spring of 1908 proved again very wet, so that plantings of all kinds were done under great difficulties. The latter part of June of the same year it changed for the better to dry weather, and then we did not have any rain for four months. Our soil, which is very heavy, turned hard as brick, and it was impossible to crumble

Springtime in Mr. Hagen's orchard.

it up fine enough to keep moisture from evaporation, which was great, even tho the supply was also great. The consequence was that the plant's roots could not penetrate in such a hard soil. I noticed especially among strawberries that Prof. N. E. Hansen's strawberry No. 1 survived like cactus on the dry prairies of the arid western states. They were planted in spring 1908 and set lots of plants. Ruby came next and have wintered well in this dry condition. So far this season the weather has been just right, everything has done well that has been planted, and it is a pride to look at the way everything grows and blooms.

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Fruits of nearly all kinds are over blossoming except raspberries and the like. The spring weather had been dry, and cold retarded the blossoming till the first week in June. If no untimely frost comes the fruit crop will be large, and there has been rain enough to support and carry along the fruits in fine shape. Cultivation can be done nicely, and we are satisfied with such a condition.

I could not in this report go into details with the experiments that I have carried on now for a number of years. I might mention some of them in apples, crabs and plums. Wealthy, Duchess, Patten's Greening, Borovinka and Peter and also others do very well. Of crabs Florence, Early Strawberry, Virginia, Powers, Greenwood are leaders with me. Plums are as follows: Marble is an early and annual bearer. Last year the crop was good on many sorts, such as the Wood, Wyant, New Ulm, Cheney and Wolf. Forest Garden seems to be hurt; either it has been too wet for them or the winter of 1907-8 was too severe on them. It has been planted fifteen years but has never borne heavily. De Soto is too late for this part of the country.

I will take pleasure in mentioning what has been planted the last two years and their behavior. Two years ago I planted six Yahnke apples, but they have not so far proved hardy. However, last winter they came out better, even tho we had last winter two weeks of solid hard freezing in January that went down to forty and more below zero several times. Three Kiveskoe were planted on rather too low ground to stand well in such rains as we have had in later years. Two Alto crabs planted some time—they are on higher ground—are doing nicely. Two Ivins seedling apples two years planted are also hardy and doing well. Three Ivins apples are hardy and doing nicely under the conditions that have prevailed. Also two Artics top-worked not hardy. Six Ivins Pippins quite hardy and healthy trees. These trees are all exposed to storms and have no protection and think ought to be further propagated. I also have three Rankin and three Deickman that are promising, and it seems the last two winters could not change them.

The Northwestern Greening I have replaced with Iowa Beauty.

When I ordered from Prof. N. E. Hansen from Brookings, S. D., some of his later productions, I received also some extra sorts besides, and I was to obtain in my vicinity some good wild fruits. This I have been trying to do, but it has been utterly impossible for me to remunerate him for his kindness toward me. I received three Hanska plums planted a year ago. The condition of soil they

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were in was not the best and the growth was light, and they seem to have frozen back some, but they are coming out vigorously this spring.

The Ames plum is hardy in appearance so far and has grown already fifteen inches. Three Euopa, sister to Sopa, are coming into full growing and are hardy so far. Six Tokeya plums have not done so well and have not wintered to perfection as Euopa.

One Sapa. This single tree seems perfectly hardy and has put on a nice growth already this spring. Three Huya. These trees are also doing finely and seem to me to be very hardy. Two Owauka, a sand cherry hybrid, are in bloom now one year planted and perfectly hardy. Three Wautesa were planted on rather too wet soil, but they have stood all adversities and are hardy.

One Wakupa was planted (this tree is a sister to Skuya), is a promising tree, hardy, and the growth is good in our heavy soil. One Skuya stands on higher ground than Wautesa; a rapidly growing tree and quite hardy. Three Yuteca plums are also hardy. They stand near a low place, but are doing finely and full of life.

Twenty-five Sunbeam raspberries were hurt badly in being planted in too wet condition, and the lack of cultivation soon after planting caused the ground to crack badly after the dry weather set in in the latter part of June and fall, as previously mentioned.

This spring I have put in more windbreaks, as my ground extends a little every year.

P. S. The Lowland Raspberry apple was omitted and should have a place among our apples at least for trial. It is doing finely with me and is hardy.

Jeffers Trial Station.

DEWAIN COOK, SUPT.

Trees and plants at this station came through the winter of 1908-9 in as good condition as usual, tho mice did more damage to fruit trees than usual by girdling. Where the injury was near the ground we covered the injured place with a mound of earth, but some of the injury was two or three feet up on the body of the tree, and in that case we covered the injury with a coat of paint.

Rabbits did no damage to our fruit trees. We do not allow a rabbit on the farm—that is, for only a short time.

Red raspberries are looking fine, and we expect a good crop of them, mostly Brandywine—the Cuthberts killed to the ground, that is, those that were cultivated with horses. But we have some

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that we cultivate only with a scythe that wintered all right. The Sunbeam raspberry, from Brookings, South Dakota, is looking the best of them all. The King raspberry, sent me by Prof. Green several years ago, is very weak; the root seems to be injured by the winter, as also does the cane.

Strawberries are in good condition. They are in full bloom now, and as we have had so many cloudy and rainy days since they began to bloom we have fears that there will be much imperfect fruit but hope for the best. We are growing mostly of the Senator Dunlap. We have a fine lot of Prof. Hansen's South Dakota No. 1. They are a vigorous lot, and wintered perfectly without being covered, but a great many of the plants failed to bloom.

I have to make an unfavorable report in regard to plums. Everything was promising up to the time they began to bloom. At that time rainy and foggy weather set in and continued until the blooming season was practically over. The Aitkin was the first to bloom. We had sunshiny weather at that time, and there is a little fruit set on some of the Aitkin trees. The De Soto bloom pretty late, and there was some sunshine a couple of days, but there will be no De Soto plums, except like most of the other varieties, a few specimens. The Terry plum bloomed still later when the weather was fine, but the blight, or plum rot fungus, took the bloom, and, like most of the others, there will be only specimens. The Compass cherry, or, rather, plum, bloomed still later, and there was plenty of sunshine. There will be some Compass cherries on trees that are outside of my windbreaks of trees, but inside the grove the rot fungus took the blossom.

The shot-hole fungus has also attacked the foliage of all of the plum trees that are on the inside of my windbreaks, and it is worse than I have ever known it to be this early in the season, but I will say that young plum trees and sand cherry hybrids that are on the outside of my shelter belts have considerable less of the plum rot fungus on the bloom and less of the shot hole fungus on the foliage—and also have more fruit now set upon them than the trees that are within the shelter of my forest trees and apple orchard.

I made a special effort this season to control, or, rather, to head off, this plum rot fungus that attacks and destroys the bloom of the plum and the shot hole fungus, that about ruins the plum foliage in many instances—by spraying the plum trees systematically with Bordeaux mixture, with the exception of a few that we re-

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served for check trees and a few young trees outside the grove trees. We sprayed most of them once just as we could see a little of the white of the bloom, or four or five days before they came into full bloom, and once just as the bloom was falling. Several of our plum trees we sprayed twice before they were in bloom and also twice after the bloom began to fall. In this list were several each of Wyants, Terry, Compass cherry and De Soto.

The plum trees that were sprayed twice, those that were sprayed four times and those that were not sprayed at all, all behaved just alike. The rot of the blossoms, taking all varieties into consideration, was worse than at any previous time, and the shot hole fungus the worst we have ever had so early in the season. The spraying had apparently no effect whatever in controlling the two fungi.

I want to make a special report about a few Japanese-American hybrid plums I have growing here, some of them for a number of years. Cheneybot—also Bursota—has all the weakness of the blossoms as have our natives and are not desirable. The America is not hardy enough, and fruit will probably not ripen early enough. The Eureka and the Emerald have quite a little fruit set on them now, and I think that the blossoms will fertilize under more unfavorable conditions than will our natives. The hybrid known as B. A. Q. are now loaded with young plums, and we may have to tie the branches up, as we did last season to keep them from breaking down—the spring of 1908.

Prof. Hansen sent me several of his Japanese hybrid plum trees. They were apparently only one year old from the bud or graft. This season those little trees are from three to four and one half feet high, and the following varieties bloomed freely this season, and we will get some fruit from a few of them, viz., Skuya, Okiya, Wakepa, Enopa, Etopa, Opata, Eyanue, Wahanka and Owanka. The last named variety has more fruit set on the trees than has any of the other varieties of that lot.

We have seven other varieties of Prof. Hansen's productions, including two varieties of crosses of sand cherry and apricot, and his sand cherry and peach cross. We will report upon them later.

Prof. Hansen also has our thanks for a collection of his 1909 plum trees.

We will evidently get a crop of apples this season. We sprayed all of our bearing apple trees, part of them twice, before they bloomed, then again just after the blossoms dropped. The rest we only sprayed once before they bloomed and once after, and I think we have headed off the apple scab fungus.

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I have discovered no apple blight so far this season.

The standard varieties have all set fruit for a good crop. The Wealthy, where they were not well sheltered from the south winds, show an inclination to blossom and bear mostly only on the north side of the trees, but such is not the case where the trees are well sheltered from the south and west winds. The Patten's Greening is away ahead of the Wealthy in early and heavy bearing in exposed locations.

The following varieties have, I am inclined to think, set more fruit than they can properly mature: viz., Patten's Greening, Okabena, Antonovka, Cross (413) and Northwest Greening—the latter top-worked on Hibernal and Virginia crab.

We intend to spray our apple trees again in a few days—but our plum trees, we have quit spraying them.

La Crescent Trial Station.

F. I. HARRIS, SUPT.

The orchard came through the winter in a somewhat dilapidated condition, the ravages of mice and rabbits being worse than ever before. This was caused by the deep snows and a general scarcity of food. Nearly 400 trees were injured, and of course they were among the choicest varieties and just coming into bearing. Some of them were removed and replaced with others and others patched up, but all are practically dead. In other sections of the county the damage is even greater by authentic reports. As if to make amends for this, the blossom in the old orchard was unprecedented and hopes were high for a few days, but the drop has also been unusual, and the prospects for even a small crop are growing less daily.

The weather was favorable for spraying, and much was accomplished, but it was labor and material thrown away as the few apples left on the trees have been stung by curculios. The quality as well as quantity will be away below the average and in many cases a complete failure.

Cherries are practically all dead, and plums did not set any fruit. Grape vines were injured and did not start till extremely late and are deficient in bloom.

Small fruits promise a good crop where covered but were killed in most fields where not protected. Strawberries are better than last season, but the stand is light as the dry weather last fall pre-

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vented the young plants from taking root, and the acreage is also small—so they are going to be a luxury. At this writing, June 15th, the earliest are just beginning to ripen, and the late blossoms do not appear to be well fertilized, so a short season is expected.

Raspberries are looking fine, and blackberries are now covered with blossoms.

Montevideo Trial Station.

L. R. MOYER, SUPT.

The Chinese lilac, *Syringa Chinensis,* obtained last year from an Eastern nursery, came into bloom this summer and proves to be a very desirable species, with slender arching branches and purple lilac or reddish flowers in large and broad panicles. It appears to be the same lilac that has long been in cultivation here as *Syringa Persica.* According to Alfred Rehder, in Bailey's Cyclopedia, the name is also synonymous with *Syringa rothmagensis.* It is one of the best of the lilacs.

The *Pekin lilac,* sent out by the same nursery, does not seem to agree very well with the description of *Syringa Pekinensis* as given in the cyclopedia, but appears to be more like the typical *Syringa Persica* of Linneus. Further time is required to make the determination definite.

The new bush honeysuckles, *Lonicera bella candida* and *Lonicera bella albida,* both seem to be hardy but are too young yet to show what they will do. They both appear to be varieties of *Lonicera Tartarica.* Few shrubs give greater satisfaction than the varieties of this old species, and among them all there is probably none better than the variety *speciosa* Carr., introduced by Prof. Budd as *Lonicera splendens* Regel.

None of the privets tried have proved to be hardy, but *Ligustrum citiatum* came thru last winter uninjured on a dry bluff-side, and *Ligustrum ibota regelianum* came thru with but slight injury.

The American crane's-bill, *Geranium armenum,* is a stately plant and appears to be entirely hardy, producing large crimson flowers. A variety of the Iberian crane's-bill, *Geranium ibericum platy-petalum,* appears to be hardy too and is in bloom at the present writing, producing deep violet flowers.

Jacob's ladder, *Polemonium caeruleum,* has survived two winters here and appears to be a desirable hardy blue flowered plant, blooming in early June.

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Bethlehem sage, *Pulmonaria saccharata,* with variegated leaves and reddish-violet spotted flowers, makes an attractive border plant and seems to be entirely hardy.

Mountain fleece, *Polygonum amplexicaule,* came thru the winter uninjured, and seems to be as hardy as *Polygonum Sieboldii,* a plant that has been in cultivation here for a dozen years. Both are valuable to give tropical effects to the border. The last named plant is called by many dealers *Polygonum cuspidatum.*

The different varieties of pyrethrums, now known as *Chrysanthemum coccinium,* are among our most valuable border plants, and are at this writing just coming into bloom. They are of the easiest culture and when once introduced almost take care of themselves.

In a shady part of the garden, under a spreading elm tree, a most effective border planting has been made from our common wild honeysuckle, *Lonicera dioica,* interspersed with our wild white violet, *Viola Canadensis* and our wild blue phlox, *Phlox divaricata.* In fact we can think of nothing in the garden more satisfactory.

Some discouragements must be reported. Rosa rugosa, claimed to be exempt from all diseases, has been badly affected by the rose rust (Pragmydium), while its roots are so badly affected by a gall insect as to make it a sorry looking sight. The galls are near the surface of the ground and are rather more than an inch in diameter, filled in early spring with active white larvae.

The outlook for most kinds of fruit is good.

Owatonna Trial Station.

THOS. E. CASHMAN, SUPT.

The fruit crop for the season of 1909 promises to be the largest in the history of this part of the state. Nearly all the trees of bearing age have set well. The past winter has been very favorable; therefore hardy varieties came through the winter without injury except that caused by rabbits, which proved very destructive, and they will have to be reckoned with in the future. In my opinion, the best way to do this is to feed them well. They will not eat the bark of apple trees unless they are hungry; therefore we do not have any trouble except during winters when their food is covered with snow. Clover hay and cornstalks will usually satisfy their appetites. In the meantime we should keep the shot gun loaded and put them out of the way when opportunity presents.

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The Owatonna trial station promises a good fruit crop also, and I hope to have something good to report at the annual meeting. We have given the trees the necessary spraying and cultivation, and they are in a very thrifty condition.

Paynesville Trial Station.

FRANK BROWN, SUPT.

There is little of general interest to report at the Paynesville Trial Station at this time as our work is still mostly preparatory and testing for this locality what others have already discovered.

The prospect for apples in this part of the state is the best for years, even very small trees were covered with bloom. One stunted three year old Patten's Greening apple tree, twenty-five inches high, had eleven well developed bunches of blossoms and has several small apples growing on it now.

Compass cherries are so heavily loaded that thinning out the fruit will be the only way to keep the trees from breaking down.

Plums will be very light.

Everything is very late. Strawberries are now (June 17) in full bloom, with a fine promise of fruit, unless the heavy rains we are having should blast them.

Taking all things together, horticulturists have much to encourage them in this part of the state, and undoubtedly central Minnesota will be heard from in the fruit line in the near future.

Waterville Trial Station.

SETH H. KENNEY, SUPT.

The grafting on Gould and Alaska crab with scions of commercial apples obtained from Massachusetts and Vermont, set three years ago, promises from the blossoms quite a variety of winter apples. I kept up this top-working to April, 1909. The thermometer last winter went thirty degrees below zero, but none of the grafts of the commercial apples have failed. It looks to me that this top-working will soon make Minnesota noted in producing kinds that we never expected we could grow. At this station the Peerless never has produced a full crop of apples. Four years since I top-worked one tree with Wealthy. This spring the blossoms were as profuse as on the Wealthy trees.

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I have five grafts of the Bartlett pear that I obtained of Capt. Reed, of Glencoe, that wintered well. As many more set on Gould crab failed. The bloom on Wealthy and Malinda was full. One graft of Ben Davis on Gould blossomed.

June 4th, I sprayed with Bordeaux mixture, six pounds arsenate lead to fifty gallons. The spraying was delayed so that the leaves would carry the poison, which does that to perfection.

The plums do not indicate much fruit. I think the Surprise needs other varieties to fertilize it. I have them set close to the apples. I would not do that again as the apples close to plum are worse stung with curculio.

The Transcendent apple is not fruiting much. If some one could introduce an apple that would not blight and as good as Transcendent it would be valuable. I think from all I can learn the Jewell Nursery Company have that seedling—at least I hope so.

The Sunbeam raspberry, obtained from Prof. Hansen, of Brookings, S. D., promises a full crop. He sent me five varieties of apples; part of them blossomed; they were grafted on the Gould crab. The sand cherries No. 7 and No. 8 blossomed. I do not think they will bear much, think so much wet weather a deterrent.

The top-working of apples was successful as we had no hail, and most of the sprouts have been broken off near the grafts to give the grafts a better chance to grow. Am doing this from June 1st up to date.

The Hansen strawberries look promising. They got no covering but snow; the bloom is full. One dozen huckleberries from Massachusetts are growing but slowly on account of cloudy weather. These were choice berries that I picked the fruit from more than fifty years ago and shall watch results.

The twenty Ironclad peach trees wintered well; I mulched the roots heavily with fine peat. I purpose to cut barrels open and fit the halves with hinges; cut the branches in August so as to have the barrel halves close around them for winter and fill with peat or sawdust. Each stave should be riveted onto the hoops. If the tree is tall two barrels could be used. I feel certain this would give us peaches every year. Some peach grafts on the wild plum refused to grow.

The general success in top-working on hardy stock with so many members of our society seems to point a sure way to success. Looking back to my first efforts thirty years ago, seeing the good results since, I think those that test it will not make a mistake.

Gould crab promises a full crop.

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West Concord Trial Station.

F. J. COWLES, SUPT.

The spring has been very late and backward, causing the trees, shrubs and plants to bloom late, escaping the late frosts. It looks as if there would be a large fruit crop. This has been a fine spring for setting plants and trees, as the cool weather has given them plenty of time to start before warm weather set in. We have set several acres of strawberries and never had a more perfect stand, and our plants are so large and vigorous that we expect a fine bed by fall. The past few years have been so wet that June grass has discouraged many in the vicinity to set out many for the market, so the acreage is small; but the prospects are that what plants we have will be well loaded.

Currants are not very well loaded with fruit. Gooseberries are fair; Carrie gooseberry, two years old, came through the winter in fine condition and is bearing some fruit. Raspberries came through the winter in good condition without covering. The varieties are Older, King and Ironclad. We have a few Shaffers that we did not cover, and they are in fine condition. They were covered with snow most of the time.

In our vicinity there were a great many apple trees destroyed by rabbits. I will tell you how I saved mine. I have an orchard of over 200 trees, and near this orchard a block of nursery trees. So last fall I left two rows of corn standing without husking. When I saw and heard so much complaint about the rabbits I was anxious about my trees, but can say that scarcely a tree was touched, tho in the spring I found there was not a kernel of corn left, the rabbits having taken it all. I prefer to feed my rabbits corn rather than apple trees.

Most varieties of apple are well loaded with fruit, and we expect a large apple crop in this vicinity. We have done some spraying and hope to see some perfect fruit. We are trying some of A. D. Brown's seedling apples and hope to be able to report favorably on them from time to time.

At this time snowballs and spiraea are at their best. Snowballs have not been troubled with insects this season. Peonies are late again this season, not being in bloom at this writing. We are testing a few shrubs and trees from northern China which we hope will prove of some value to this country.

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Our evergreens all came through the winter in fine condition, from the large ones to the very smallest. What makes a better windbreak and adds to the beauty of the farm more than these trees! If care is taken in not letting the roots get dry in handling they are as easy to make live as a deciduous tree, and are much more satisfactory for a windbreak. For a timber tree the Norway poplar surely gets a move on itself, and I believe is a great tree for the northwest.

Growing Peonies from Seed.

O. F. BRAND, FARIBAULT.

Forty years ago it would likely have been said of a person who undertook to grow peonies from seed that he was a crank or had "bats in his belfry," but since 1878, when we created the first experimental station in Minnesota and made Peter M. Gideon superintendent of it, the originating of new fruits and flowers has been placed in the forefront of material progress. In pomology we are glad to honor such originators as Gideon, Rollins, Miller, Hoffman, Lord, Lyman, Perkins and others. In floriculture we can show to the world that our state is in the front rank in the production of new and better varieties, for our American seedlings surpass any of the old country varieties.

Thirty-five years ago I had never seen a peony seed. As there are still but few people in the world who have I will tell how to find them. When the bloom falls, the seed pods are at the top of the stem and of a purple, green or brown color, and usually contain from two to five or six seeds in each pod; gather the seeds as soon as the pods are ripe, or as soon as the seeds are turning brown or chocolate color, which will be about three or four weeks after the blossoms fall. They should be kept where they cannot get dry and hard.

In Minnesota usually the best conditions for keeping the seed will be found on the ground under the stalks of the peony, where the shade is complete. Spread the seeds out on the moist earth in such shade and cover with an old board and burlaps or old cloth over the board, where they may remain until October, when they should be planted; or they may be planted at once and covered with hay or straw to the depth of one or two inches. If the seeds get dry and hard, they will not germinate till they have lain in the ground over two winters. Save seed from the best varieties. We had three hundred varieties of the world's best when we saved our seed. Some very fine varieties, such as Martha Bullock and Humeii, produce no seed, while some of our very best ones produce an abundance. Seed from one or two extra fine varieties are enough to start with.

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In planting, cover the seeds one-fourth of an inch deep. Any good garden soil will do for a seed bed. Prepare the ground well about the same as for peas. Plant the seed six inches apart in the row, for every one will grow, and some of them may have to remain where they are planted for ten years. Rows may be two and one-half to three feet apart. Make a covering at least two inches thick of old

O. F. Brand and his seedling peonies.

hay, which leave on until about April 15th. Usually the young plants will be well up by the first of May. Give clean and careful cultivation three inches deep till the middle of July. A thin mulch of straw manure, applied to the entire surface in October, will be good. The beds should be cultivated as above mentioned for six or seven years. There may be a few blossoms the third year, likely a fraction of one

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per cent. The fourth year there will be quite a reasonable number in bloom, likely four or five per cent. With us the third season after they begin to bloom more than one-half have blossomed. In one bed, planted in the fall of 1899, one very choice one did not bloom until 1906, and one variety, awarded the first prize this year, blossomed the first time in 1908. We expect others to unfold their loveliness for the first time in 1909, and probably others still in 1910.

Some will say, from four to ten years is too long to wait to see whether one has drawn a prize or a blank. We have never waited a minute. We go about our daily work just the same as though we had never planted a seed. The years roll by regardless of what we do, and when we go among the beautiful flowers in June and find some lovely newcomers there we care little for the years that have gone since the seed was planted.

Peonies vary much from year to year, and after their first bloom it requires three or four years after transplanting to learn all their good qualities and weak points. Let the seedling blossom two or more years before dividing and transplanting, for it may change. The third year after being transplanted is early enough to name a seedling peony. It needs that length of time to fully determine its character.

Great as is the pleasure of knowing that one has given to the world a beautiful new flower, greater still is the satisfaction of writing up their descriptions and christening them. In fact, we have found the greatest enduring pleasure in bestowing on them the names of dear friends and worthy people whose lives have blessed mankind. No warrior or king, prince or princess, baron or baroness, or any other whose name became known by reason of the accident of their birth, or by their skillful manipulation of money or men to advance their own selfish ends, did we consider worthy of being remembered in naming our peonies. Aside from personal friends, we found much pleasure in remembering the father of this society, John S. Harris, and former members of this society, Mrs. Van Cleve, Judge Berry, Colonel Stevens, O. M. Lord and J. O. Barrett.

A large, stately pure white was named Frances Willard. Another, tall and commanding, of majestic size and form, with color and fragrance surpassed by none of its class, was named Elizabeth Barrett Browning. While the names of those immortal women, Florence Nightingale, Harriet Beecher Stowe, and many more equally great and good, were bestowed on flowers of great beauty.

For fear of making this paper too long, I will close by adding what I have once before written:

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"The originators of new and better creations in the floral world should be possessed with a consciousness of their own ability to materially assist in the development of superior and meritorious new flowers, and they should also be slaves to that best of masters, love for the object sought. An ever widening horizon of floral possibilities continually opens before us, and the lover of the new and beautiful is invited and attracted with an irresistible influence into the great unknown, into the unexplored realms where beautiful queens of the floral world are reigning supreme. Nature's liberality is increased by her repeated donations. Knowing this, we see no resting place, no achievement that can satisfy or cause us to believe that the best has been obtained."

Pruning in the Nursery.

HENRI THEIBAULT, FOREMAN CLINTON FALLS NURSERY, OWATONNA.

Pruning trees in the nursery, according to a nurseryman's point of view, requires the most careful attention and study. I might say without the least hesitation that pruning trees in the nursery is an art only acquired from being in constant contact with all varieties of trees, studying the growth and habits of each variety. For instance, we will take apple grafts. After having made sufficient growth, they should be carefully watched. Do not rub foliage off and prune to a whip, as some do, causing the tree to have a tall, slender growth; merely prune to a leader, leaving all the foliage possible, also all side shoots which do not encroach upon the leader. If the latter method is followed, you will find that you have clean, good calibered stock.

Too much cannot be said as regards the tool used for pruning among small trees. According to my idea, a sharp pruning knife should be used. Pruning shears, if you have observed closely, always, or in most cases, bruise at the cut, causing an ugly wound which does not readily heal over. The pruning knife also has its drawbacks if improperly used. In pruning a limb from a small tree, the knife should be on the under side of the limb, blade on shoulder of limb, cutting upwards slightly to the tree. A careful pruner following these directions very rarely cuts the tree. Most of you are nurserymen, and you will readily understand the term of shoulder. By following the above method, you will have nice, smooth trees. If the shoulder should be cut, it will not callous, leaving a cavity on the trunk of the tree, making a harbor for aphis and other insects, besides giving the tree an ungainly appearance. Too much cannot be said as to cutting even

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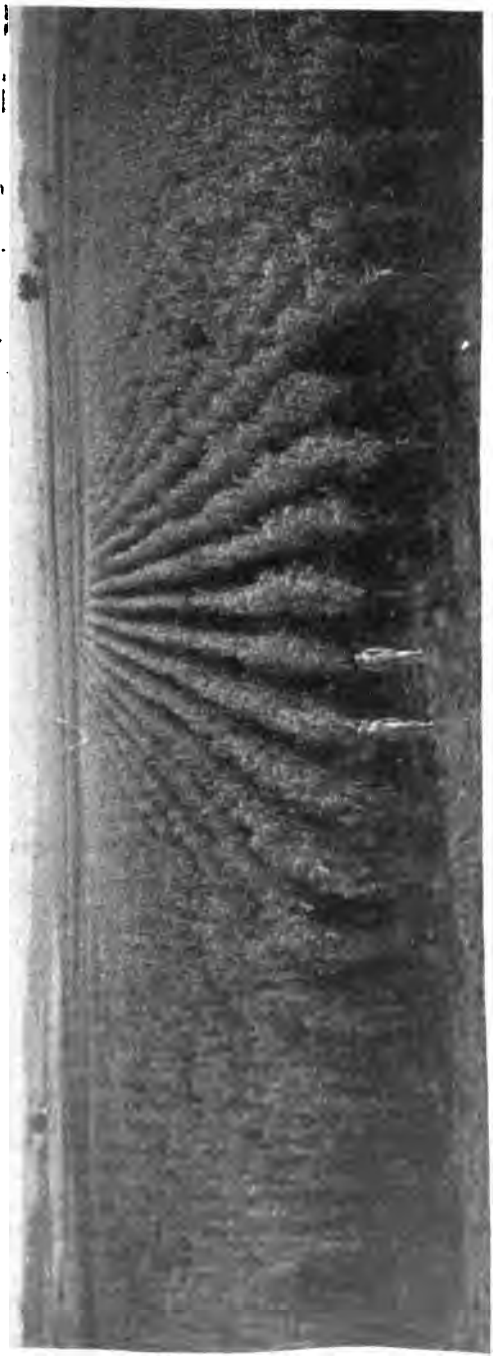

Block of apple trees pruned for digging in Clinton Falls Nursery, Owatonna.

with the shoulder. After the graft has attained size, it is left to the pruner's practiced eye to make the tree shapely. There is no one particular way of pruning apple trees that I can describe otherwise than to prune into a shapely, marketable tree.

The budded plum requires more careful pruning than the apple graft. After examining the plum seedling and being satisfied that the bud has caught (a nursery term), you proceed to stub the seedling by placing the knife back of the seedling plum, about the center of the bud, and with an upward motion cut off the top of the seedling, the knife coming out on the bud side, half an inch above the bud. Now, possibly this would not be considered pruning by some, but I consider this to be the most important pruning in the nursery. It requires considerable skill to tell if the bud is alive,—no guess work,—and considerable dexterity in making the cut called stubbing. After the plum commences to

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sprout, or sucker, is another period of vital importance to the bud and also the nurseryman. Sprouts or suckers, as each may be termed, must be taken off the stumps in order to give the bud the necessary sap to attain its proper growth. I find a piece of oak made in the shape of a small putty knife a first-class tool for sprouting. It does not bark the seedling and can be used for suckers at the root. All foliage should be left on the bud, and I find it beneficial to the plum in nearly all varieties to leave side limbs on, always bearing in mind to keep a vigorous leader. The following spring, the plum buds go through the process called topping, cutting the tops off at about three feet six inches or three feet eight inches, pruning all side limbs off—in fact, trimming to whip. In order to make shapely tops, if the side limbs should grow faster than the top growth which is required, and the tree has the calibre, it will be necessary to prune side limbs off in order to direct the flow of sap to the top.

Hard Maple.—As regards pruning of hard maple. If you go to the woods, you will find that nature does most of the pruning. You will find fine symmetrical trees, never touched by man. Plant hard maple in the nursery and let most pruners at them, and what have you? An unshapely tree. I thoroughly believe in letting hard maple have nature's way in the nursery, only assisting the leader.

Cut Leaf Birch.—Cut leaf birch, one of the most beautiful trees which adorns the Northwest, also one of the most difficult to grow, is very often ruined through want of knowledge in pruning. Whether it be graft, bud or inarched, it requires the same amount of careful pruning. In my opinion, with a cut leaf birch, in order to add to its strength, not a single side limb should be taken from it. If birch is trimmed, as I have seen some trimmed, like a maple or ash, you will find it necessary to stake your birch, but if all limbs are left on, and a vigorous leader kept always in sight, you will have a tree fit to adorn any lawn or park.

"DELICIOUS" APPLE.—This comparatively new variety of apple, about which considerable is being said now, originated on the farm of a Mr. Jess Hiatt, of Madison county, Iowa. The original tree is at this time about twenty-six years old, and has borne, it is said, twenty crops without a failure, and has stood a a temperature of forty degrees below zero without the slightest injury in bud or limb. As to quality the name describes it, being of a peculiar flavor and delicious fragrance; a brilliant dark red color, mingled with gold near the blossom end, and claimed by some to be as good a keeper as the Ben Davis. This does not mean that necessarily this variety is hardy in Minnesota—indeed, to our knowledge it has not as yet been tested to know anything with certainty about it—but it is reported to have stood well in Iowa.

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Drainage at the State Fruit-Breeding Farm.

PROF. JOHN T. STEWART, ST. ANTHONY PARK.

The State Fruit-Breeding Farm consists of the East ½ of the Southwest ¼ of Section 7 and a five-acre pasture, 217 feet wide, extending north to Tamarack lake, located in the southwest corner of the East ½ of the Northwest ¼ of Section 7, Township 116 North, Range 23 West, Carver county, Minnesota. The East ½ of Section 7 is the only area considered in this paper, and contains by actual survey 72.89 acres. A preliminary survey of this area, having in view the installation of an underdrainage system, was made the latter part of August, 1908.

The area is rolling with the surface sloping in various directions, nature having provided a good fall and an excellent outlet within a short distance of all the depressions. The soil is black loam underlaid with a light colored clay subsoil. The wet areas are caused by beds or depressions in the slopes, the natural surface rising on the lower side so as to form a ridge or rim. The water coming from the steeper slopes is caught in these basins, and its escape over the surface prevented by the rim. As the subsoil offers considerable resistance to the flow of underground water, these basins hold water for a sufficient period to prevent the production of crops. The water slowly percolating from these basins causes springy or wet spots in the land at lower levels and again affects its productive qualities. Such a place occurs at the outlet of branches 1 and 2 of Main B.

The survey determined that the total area of land in these basins which is rendered non-productive would amount to five acres, there being an additional ten acres that on an average would not produce over one-half the crop that could be raised on the high land. The survey farther indicated that a fall of six inches to three feet per 100 feet could be had, but the rim around the lower side of the basins would require deep cutting for a short distance to get a sufficient depth. Otherwise, there would be no special difficulties encountered.

As it was not practicable to secure experienced tile workmen, the construction was placed in charge of the superintendent, Mr. Chas. Haralson, who looked after the bottom work in the trenches and laid the tile, the entire construction work being done by men inexperienced in this class of work. Bulletin 110 of the Minnesota Experiment Station was used as a general guide.

Tile.—The tile used were hard burned clay pipe bought at Mason City, Iowa, the entire order being shipped in two cars, and delivered at Zumbra Heights, f. o. b. for the following price per thousand feet:

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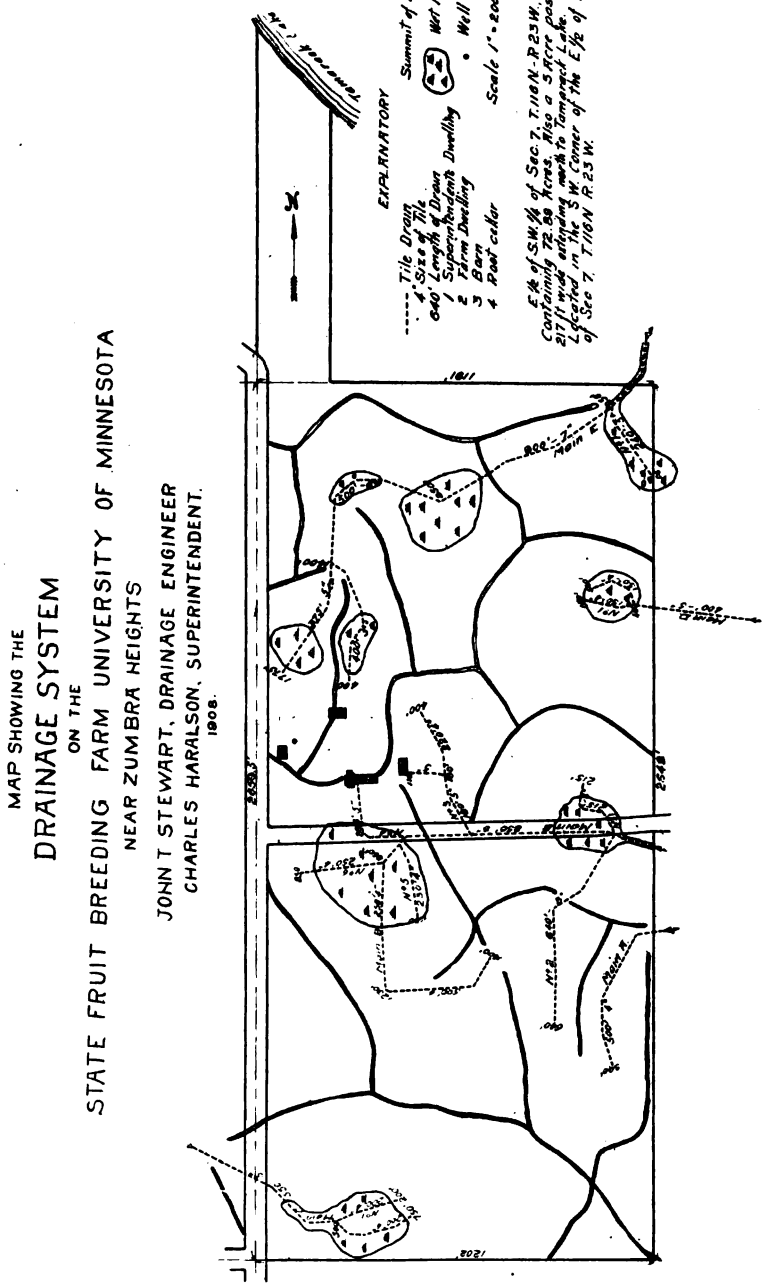

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Eight-inch at $55.50; 7-inch at $43.40; 6-inch at $34.00; 5-inch at $25.60; 4-inch at $19.20.

Table Showing Number of Feet and Size of Tile Used on Each Line.

	8 in.	7 in.	6 in.	5 in.	4 in.
Main A	...	...	...	...	500
Main B	800	...	...	300	500
No. 1	...	...	...	...	215
No. 2	...	...	...	640	...
No. 3	...	...	...	180	220
Root cellar	..	...	...	110	...
No. 4	...	...	...	285	...
No. 5	...	. .	...	...	230
No. 6	...	...	...	...	250
Main C	..	...	...	550	200
No. 1	...	...	...	...	200
Main D	...	...	...	400	160
No. 1	...	...	...	...	150
Main E	...	900	500	375	...
No. 1	...	...	...	240	...
No. 2	...	...	...	400	...
Extra	...	...	...	120	375
	800	900	500	3,600	3,000

Specials, 3 junctions, 8-inch by 5-inch, at $0.30; 2 junctions, 8-inch by 4-inch, at $0.30; 3 junctions, 5-inch by 4-inch, at $0.15; 1 junction, 7-inch by 5-inch, at $0.25; 1 junction, 6-inch by 5-inch, at $0.20.

In laying, the tile overrun the factory count eighty feet in a thousand. The overrun in the eight-, seven- and six-inch were all laid, which extended these sizes above the point indicated in the original plans. The total amount of the tile bill was $252.62; the value of the extras and overrun amounting to $25.00, making the actual cost of the tile used in the main drainage system $227.62.

Hauling Tile.—The tile were hauled from the car to the drain by one team in an ordinary wagon with a double box, three men working with the team. The average distance of the haul was one-half mile and three and one-half days were required for the work.

Cost of Hauling Tile from Station to Drain.

Team, 3½ days, at $1.75	$6.12
Three men, 3½ days, at $1.75 each per day	18.36
	$24.48

Trenching, Laying Tile and Blinding.—Trenches were excavated by hand and varied in depth from two and five-tenths to nine feet, with an average of three and five-tenths feet. The highway was

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crossed at four different places and quicksand encountered in the deep cut below the mouth of No. 3 on Main B and at 850 in the slough on Main E. Some caving occurred at each of these points, and on Main E it was necessary to lay plank in the bottom of the trench to secure a firm foundation on which the tile could be laid.

The deep cut through the basin rims necessarily caused the trenching to move slowly at these points. Otherwise the work would be considered as good digging. With the exception of Main A water appeared in all of the trenches soon after they were opened and continued to flow throughout their length. The string target method was used for grading the bottom where the flow of water in the trench could not be used for this purpose, and the tile were laid by hand.

Cost of Trenching, Tile Laying and Blinding.

114 days at $2.00 per day	$228.00
16 days at $1.75 per day	28.00
Total	$256.00

Filling Trenches.—The trenches were filled with team and scraper where it could be used, and around obstructions by hand.

The Cost of Filling Trenches.

One team 6½ days at $1.75 per day	$11.37
Two men 6½ days at $1.75 per day	22.74
One man 3 days at $1.75 per day	5.25
	$39.36

Total Cost of the System, Consisting of 8,300 Feet of Tile Drain.

Engineering	$50.00
Tools and equipment	17.54
Tile f. o. b. Zumbra Heights	227.62
Hauling tile from station to drain	24.48
Trenching, laying tile, blinding	256.00
Filling trench	39.36
	$615.00

Let us now consider what the state has gained by this expenditure of $615.00, considered from the standpoint that the state secured this land not for the mere ownership of land or speculative purposes, but for the specific purpose of having a given area of cultivated land. The 72.89 acres cost the state $7,653.45. Out of this area there is used:

For highway purposes	4 acres
Non-productive land in sloughs	5 acres
Ten acres of land producing one-half crop, equals in non-productive land	5 acres

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or a total of fourteen acres, which leaves an actual area of fifty-nine acres of tillable land, costing the state $129.72 per acre. It is believed that by this system of drainage the five acres of non-productive land and the ten acres that produce a half crop will be made equal in productive qualities to the same area of the tillable land, and will increase the cultivated area to sixty-nine acres. The benefits to the farm will then be $1,297.20, at a cost of $615.00, these ten acres being added to the farm at an actual cost of $61.50 per acre against $129.72 per acre for tillable land in the original purchase.

But does this $615.00 represent all the value of this under-drainage system to the fruit farm? Let us consider again. All agriculturalists will agree with the following principles:

A regular field with the soil in a uniform condition throughout requires less time to cultivate than an irregular field and one which has areas scattered over it that cannot be cultivated with the other portions.

A regular field with a uniform soil can be arranged for crop rotation and experiment plot work to suit the crops and the methods of cultivation to better advantage than a field containing non-productive areas.

A field with a dry, loose soil works easier than one with a wet, sticky soil.

The removal of surface and seepage water is the first step in good road building.

A field rendered partially non-productive by excessive moisture may be more detrimental to agricultural success than swamp land, for such lands are often plowed, planted, cultivated and then the crop destroyed, thereby not only becoming non-productive, but labor and seed are lost, due to the fact that a crop can be only occasionally grown.

A field, the entire area of which is cultivated, presents a more pleasing and sightly appearance than one dotted over with sloughs, which in the spring breed frogs and mosquitoes and later are covered with water grass, giving off ill-smelling odors from dead fish and decaying vegetation.

A permanent improvement on a farm, as in the city, is a benefit to the entire community. It is an example to each of what improvement means and makes that locality a more desirable place of residence.

The system of drainage under discussion has a value under all of these principles, and while each cannot be exactly rated in dollars and cents, if considered in line with other improvements on the farm,

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I believe the management feel that the value added under the above list of benefits is sufficient to equal the cost of the improvement without considering the value of the land actually reclaimed.

Mr. F. W. Kimball: At my place I laid a large tile drain for about a mile, and when I came to the end of my land there were three or four owners who would not join in continuing the drain. The last half mile is practically of the same level. Will it be safe to run the upper two hundred feet near the surface, or can I dig a well at that place and would the water seep away? Perhaps I can get the other parties to connect near the end of my land where there is a good place to drain the water. I want to know the effect of this tile draining that is near the surface.

Prof. Stewart: Your tile would be all right so long as you do not get them so near to the surface they would be plowed out.

Mr. Kimball: I expect to use the land for grass land, and I will have to carry the water down the drain for about a mile, and I want to find a way to discharge it without destroying the tile. The question is whether water coming in there would run through the drain fast enough so it would not freeze solid.

Prof. Stewart: If the tile freezes full of water it will burst, but you want to leave a little open ditch at the end of the drain.

Mr. Kimball: I thought possibly I might dig a large well and the water would be absorbed.

Prof. Stewart: The chances are it would not. If you provide a place for the water to run out so that the tile will not fill up it will not be affected by freezing.

Mr. Kimball: The ground freezes three and a half feet deep, and if the water backs up in the tile it will freeze.

Prof. Stewart: If the water backs up in the tile and freezes, it does not always follow that there is harm done. It often freezes, and there is no damage done.

Mr. G. D. Black (Iowa): How near can we lay tile drain to a row of apple trees without interfering with the roots?

Prof. Stewart: In many places there is no danger in laying them anywhere. If you drain a piece of land in an orchard that is wet, the chances are that the roots will not be affected by the tile. If you are going to tile a sandy piece of land there is just a possibility that the roots might get into the tile. I know of one place where such an injury was caused. I understand some one has given an instance where apple roots caused the injury.

Mr. J. F. Benjamin: In my section they have been putting in a good many miles of tile drainage, and we fill the ditch with a plow and team. We put on a long evener and put a horse on each end and turn in the original sod after first putting in the tiling.

Prof. Stewart: We often do that, but conditions vary on different lands. Out here at the farm the most advisable method seemed to be to use the scraper and teams, but plowing is the common method.

Mr. J. O. Weld: Do you have to make a tile drain larger at the lower end?

Prof. Stewart: It would depend on the length and the area. It is not customary to lay tile larger than four inches.

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SUMMER MEETING, 1909,

Minnesota State Horticultural Society.

A. W. LATHAM, SEC'Y.

As usual nature was bounteous with its smiles on the day of the annual gathering of the Minnesota society. A warm day, with no prospect of an unfavorable change in the weather, contributed to bringing out the largest attendance that has ever been gathered together on one of these occasions. By 10 o'clock the hall in which the exhibit was being placed, and where the meeting was to be held later, was well filled with exhibitors busy in placing their fruits and flowers for display and visitors enjoying to the full the unusual opportunity to study and comment on the large exhibition being made. The season proved to be an extraordinarily late one for strawberries, so that, even though the date of the meeting was placed later than on almost any other year, yet it was only the first of the fruitage of strawberries that found place on the tables, and so the exhibit of these was very light. There was, however, a remarkable display of seedling varieties of strawberries from the new fruit-breeding farm, something like one hundred sorts being shown on a table by themselves with a suitable placard. Some of these evidenced much merit, and all of them in some particulars at least appeared to be worthy of cultivation. Further reference to these will appear in the report of the meeting.

Something over 300 entries had been made, and nearly all of these were represented by berries or flowers on the tables. The larger exhibitors in roses and peonies were the Rose Hill Nursery, of Minneapolis; Jewell Nursery, at Lake City; Mr. D. W. C. Ruff, of St. Paul, and Hoyt's Nursery, at St. Paul; but a large number of others contributed in a similar way to a display which filled the tables, reaching entirely around the hall against the outside walls and occupying also a number of large tables besides in the west half of the hall—the east half being reserved for the use of members at the afternoon meeting. The display was all that could be desired and kept the judges more than busy until a late hour in the afternoon bringing their work to completion. The list of awards following this tells the story very fully in detail.

Arrangements had been made with the management at the college dining hall to furnish dinner for the members, those who purchased tickets in advance from the secretary paying twenty-five

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cents, others paying thirty-five at the door. Something like three hundred had been provided for, and that number seemed to be a liberal allowance, judging from the number of tickets sold beforehand. As the members gathered into the hall it was apparent that there were many in excess of this number, and a fair estimate would place the attendance at dinner in the neighborhood of 400. The management had prepared a very excellent menu, which they were able to carry out satisfactorily, notwithstanding the extraordinary increase over the anticipated numbers.

At 2:30 o'clock the regular summer meeting of the society was called with Pres. Sam'l B. Green in the chair. As there was no stenographic report of the meeting, only brief note can be made of the proceedings. Pres. Green, in his opening remarks, spoke of the fact that for twenty-two years the summer meeting had been held at the Experiment Station, with the exception of one season at Lake City, which fact is also within the recollection of the secretary.

Sen. S. A. Stockwell, being called upon, said some pleasant things about the horticultural society and the enthusiastic work it is doing, and its effect upon the fruit and flower growing interests of the state. In a happy way he introduced the talks of the afternoon.

The president called upon Dean Olson, of the Experiment Station, who gave the society a hearty welcome, and in well-chosen words referred to the value of the services of the society as an educational factor, and spoke many words of encouragement along this line.

Mr. Wyman Elliot, the pioneer and the only surviving charter member of the organization, still a young man in feeling and action, expressed his pleasure at seeing so many young faces at the meeting, those who are to take the places of the old members and carry on the work that he has himself been engaged in now for fifty-five years in Minneapolis and vicinity.

Capt. A. H. Reed, of Glencoe, being called upon, gave us one of his unique and hearty talks, expressing his love for the horticultural society and its members, and his intense interest in its work.

Prof. E. M. Freeman, who has charge of a department especially devoted to the investigation of plant diseases, asked the co-operation of the members in these investigations and spoke of the fact that members by communicating with him might receive

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the necessary authority to send any material to him without expense of postage, there being a franking privilege connected with his department. In answer to a question, he stated that the plum pocket, which is so prevalent in the state, is a fungus which causes the plum to swell before it is mature. It is a parasitic plant living on the plum. The spores float in the air, lighting on the plant, and the injury is done. Mr. A. Brackett, of Excelsior, referred to the Cheney plum as most subject to plum pocket, and that his experience in using lime and sulphur preparation for spraying the trees shows it will be found a material advantage. His trees, sprayed this year in this way, have not a single pocket on them. Take equal parts of sulphur and lime and enough water so that the spray will work easily on the trees, always using it while the tree is dormant.

In reply to a question, Mr. Gust Johnson explained that the lateral branches of blackberries should be pinched off as they grow. The pinching should be repeated two or three times during the season, this being one of the secrets to secure good blackberry yields.

Mr. D. A. J. Baker, one of the pioneers of St. Paul, a sturdy worker of forty years ago, spoke eloquently of the service Mr. Elliot had done the society and especially of agriculture as a most honorable occupation and the farmer as "the coming man and is to be looked up to." For a man of eighty-eight years, Mr. Baker still has great vigor. The writer remembers him as prominent at the first meeting of the society he attended in the winter of 1867-68. Though not one of the charter members, he is assuredly one of the pioneers.

Upon request, Mr. D. W. C. Ruff, of St. Paul, brought forward a number of varieties of peonies which he displayed to the audience and described some of the principal, which are as follows: Festiva Maxima, Throne De'Or, La Tulip, Madam Crouse and Floral Treasure. In reply to a question as to what was the best fertilizer for peonies, he stated that good stable manure and plenty of it was what was needed, though if the soil is heavy and rich, care must be had not to apply too much. If one had a limited amount of ground he would recommend for the best three varieties, Festiva Maxima, L'Esperance and Agida. He referred also to the Grandiflora Rubra as a good dark, rich red peony. Do peonies need to be taken up and divided occasionally? Judging by his experience, covering a limited period, the old plants are better bearers

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of flowers. If one is in the nursery business it would be right to divide them to secure roots, but for flowers they should remain intact for a considerable term of years. Peonies want the sunshine. Some won't bloom in shade; others will do fairly well.

Mr. P. V. Collins, of the Northwestern Agriculturist, gave us one of his bright talks full of pleasant words for the Minnesota Horticultural Society, and especially its veterans.

Mr. John Hawkins, of the Rose Hill Nursery, brought forward six leading varieties of roses which he described somewhat in detail. We are able here to give names of the six: Clio, Anna DeDiesbach, Magna Charta, Frau Carl Druschi, Madam Gabriel Luizet, Mrs. John Lang. He spoke especially also of Capt. Heywood as a good red rose and one of the finest bloomers.

E. B. Miller, in reply to a question, said that it is not best to cultivate a strawberry bed in the spring before bearing, at least not as a rule. A mulch between the rows with marsh hay or something of that sort is much better.

Rev. C. S. Harrison, of York, Neb., our one visitor from a long distance, in response to a call read a characteristic prose poem on "The Lure of the Peony." Those who have heard Mr. Harrison, know the beautiful way in which he puts life into the description of the flowers that he so much loves.

Mr. Geo. W. Strand, of Taylors Falls, was requested to say something of the iris on exhibition and presented a number of German and Siberian iris, commenting on them briefly. He spoke also of the Japanese iris, which needs special care to winter them through in this climate.

Chas. Haralson, superintendent of the state fruit-breeding farm, upon request gave a little description of the exhibit of seedling varieties of strawberries which has been heretofore referred to. The seedling plants were all sent out from the State Experiment Station a year ago this spring, some 3,000 of them, and this year they are fruiting. Each variety has a little plat about two feet square devoted to itself, and the one hundred varieties on exhibition represent the choicest selection from these 3,000 varieties. From this large number they have selected so far about twelve kinds to be propagated from. Last winter a large amount of crossing work with strawberries was done in the greenhouse at the farm, and seeds from these crossings have been grown, about 1,000 new varieties from this seed having already been planted in the field. A considerable quantity more will be planted

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a little later. He expressed the opinion that there ought to be a chance to get something very good from these crosses, which are made mostly from wild strawberries from Alaska and this vicinity and from some European varieties, from Norway and other northern points. These seedlings were protected the first winter, but hereafter will be left without winter protection to sift out those that are not hardy enough, purposing to secure a strawberry of value which will winter in this climate without protection.

This closed the proceedings of the meeting, and upon adjournment the flowers were distributed by their owners and assistants in the hall, each person in attendance being loaded down to the guards with whatever amount he or she desired to carry away. There was enough in the great profusion so that every one was satisfied to the full. The procession of members leaving the hall and grouped around the outside, waiting for conveyance to the street car, carrying armfuls of flowers, with the beautiful setting of the grounds of the Experiment Station, made a spectacle to be happily remembered.

Award of Premiums, Summer Meeting, 1909.

COLLECTIONS OF PEONIES.

Article.	Exhibitor.	Premium.	Amount.
	B. Terrell Hoyt, St. Paul	Third	$4.00
	Geo. W. Strand, Taylors Falls	Fourth	2.00
	Jewell Nursery Co., Lake City	First	8.00
	Rose Hill Nursery, Minneapolis	Second	6.00

C. S. HARRISON, Judge.

VASES OF PEONIES.

Article.	Exhibitor.	Premium.	Amount.
Red	Jewell Nursery Co., Lake City	Fourth	.50
Festiva Maxima	Rose Hill Nursery, Minneapolis	Third	1.00
Dark pink	"	First	2.00
White	"	Fourth	.50
Red	"	First	2.00
Red	E. A. Farmer, Minneapolis, R. 2	Second	1.50
Festiva Maxima	B. Terrell Hoyt, St. Paul	First	2.00
Light pink	"	Second	1.50
Dark pink	"	Second	1.50
White	"	Second	1.50
Red	"	Third	1.00
Light pink	B. P. Christenson, Hutchinson	Fourth	.50
Dark pink	Geo. W. Strand, Taylors Falls	Third	1.00
Festiva Maxima	Nathaniel Green, St. Anthony Park	Fourth	.50
Light pink	"	Third	1.00
Dark pink	"	Fourth	.50
White	"	Third	1.00
Festiva Maxima	D. W. C. Ruff, St. Paul	Second	1.50
Light pink	"	First	2.00
White	"	First	2.00

C. S. HARRISON, A. BRACKETT, CHAS. HARALSON, Judges.

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PERENNIALS.

Article.	Exhibitor.	Premium.	Amount.
Oriental poppies	Mrs. H. Holt, Minneapolis	Second	1.50
Oriental poppies	E. A. Farmer, Minneapolis	First	2.00
Delphinium	"	Second	1.50
Mixed herbaceous per	"	First	2.00
Mixed annuals	Mrs. H. A. Boardman, St. Paul	Second	1.50
Iris	Geo. W. Strand, Taylors Falls	Second	1.50
Delphinium	Jewell Nursery Co., Lake City	First	2.00
Mixed her. perennials	"	Third	1.00
Oriental poppies	Mrs. F. H. Gibbs, St. Anthony Pk.	Third	1.00
Iris	"	Third	1.00
Mixed herbaceous per	"	Second	1.50
Mixed annuals	"	First	2.00
Iris	B. Terrell Hoyt, St. Paul	First	2.00
Delphinium	"	Third	1.00
Mixed her. perennials	"	Fourth	.50

L. R. MOYER, MISS DAISY HONE, Judges.

COLLECTIONS OF ROSES.

Exhibitor.	Premium.	Amount.
Mrs. D. W. C. Ruff, St. Paul	Fourth	2.00
Jewell Nursery Co., Lake City	Second	5.00
Rose Hill Nursery, Minneapolis	First	6.00
Mrs. H. B. Tillotson, Minneapolis	Third	4.00

E. NAGEL, Judge.

ROSES—THREE NAMED VARIETIES.

Article.	Exhibitor.	Premium.	Amount.
White	Jewell Nursery Co., Lake City	First	2.00
Pink	"	Second	1.50
Red	"	First	2.00
White	Rose Hill Nursery, Minneapolis	Third	1.00
Pink	"	First	2.00
Red	"	Second	1.50
White	Mrs. H. B. Tillotson, Minneapolis	Second	1.50
Pink	"	Third	1.00

A. BRACKETT, Judge.

COLLECTIONS OF RUGOSA AND RUGOSA HYBRIDS.

B. Terrill Hoyt, St. Paul	Second	2.00
Jewell Nursery Co., Lake City	First	3.00
Mrs. E. W. Wilcox, White Bear	Third	1.50

ROSES—SINGLE VARIETIES.

Madam Plantier	M. C. Bunnell, Newport	Second	.50
Anna De Diesbach	Rose Hill Nursery, Minneapois	First	.75
John Hopper	"	First	.75
Baron de Bonstetten	Mrs. F. H. Gibbs, St. Anthony Pk.	First	.75
Madam Plantier	"	Third	.25
Gen. Jacqueminot	Rose Hill Nursery, Minneapolis	Second	.50
Margaret Dickson	"	Second	.50
Jules Margottin	"	First	.75
Magna Charta	"	First	.75
Madam Gabriel Luizet	"	Second	.50
Margaret Dickson	Mrs. F. H. Gibbs, St. Anthony Pk.	First	.75
Jules Margottin	"	Second	.50
Magna Charta	"	Third	.25
Baroness Rothschild	"	Second	.50
Ulrich Brunner	"	Second	.50
John Hopper	"	Second	.50
Rosa rugosa (pink)	Mrs. E. W. Wilcox, White Bear	First	.75
Rosa rugosa (white)	B. P. Christenson, Hutchinson	Second	.50
Rosa rugosa (pink)	"	Second	.50
Madam Plantier	Mrs. J. M. Scharff, St. Paul	First	.75
Ulrich Brunner	B. Terrell Hoyt, St. Paul	First	.75
Gen. Jacqueminot	Mrs. D. W. C. Ruff, Bald Eagle	First	.75
Magna Charta	"	Second	.50
Madam Gabriel Luizet	"	First	.75
Baroness Rothschild	"	First	.75
Baron de Bonstetten	"	Second	.50
Gen. Jacqueminot	Thos. Redpath, Wayzata	Third	.25
Paul Neyron	"	First	.75

E. NAGEL, Judge.

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COLLECTIONS OF STRAWBERRIES.

Article.	Exhibitor.	Premium.	Amount.
	H. G. Groat, Anoka	First	5.00

STRAWBERRIES—COLLECTIONS OF THREE VARIETIES.

Mrs. Marie Moeser, St. Louis Park	First	3.00
S. R. Spates, Wayzata	Second	2.00
H. G. Groat, Anoka	Third	1.00

STRAWBERRIES—NAMED VARIETIES.

Bederwood	Frank Stifter, Cokato	Second	.75
Dunlap	E. A. Farmer, R. 2, Minneapolis	Fourth	.25
Warfield	"	Second	.75
Haverland	"	First	1.00
Bederwood	H. G. Groat, Anoka	First	1.00
Crescent	"	First	1.00
Warfield	"	Fourth	.25
Splendid	S. R. Spates, Wayzata	First	1.00
Sen. Dunlap	A. Brackett, Excelsior	Second	.75
Splendid	"	Second	.75
Warfield	"	Third	.50
Dunlap	Dr. O. M. Huestis, Minneapolis	Third	.50
Dunlap	Mrs. Marie Moeser, St. Louis Park	First	1.00
Warfield	"	First	1.00
Splendid	Thos. Redpath, Wayzata	Third	.50
Bederwood	"	Third	.50
Lovett	"	First	1.00

STRAWBERRIES—BEST NAMED VARIETY.

A. Brackett, Excelsior	First	2.00
S. R. Spates, Wayzata	Second	1.00
Thos. Redpath, Wayzata	Third	.50

SEEDLING STRAWBERRIES.

Seedlings	H. G. Groat, Anoka	Third	1.00
Seedlings	Mrs. M. A. Rohan	First	3.00
Seedlings	A. Brackett	Second	2.00

WYMAN ELLIOT, GEO. W. STRAND, Judges.

Stump Rot of Cabbage

PROF. S. B. GREEN.

Distributed on cabbage seed. Experiments show that this disease may live on the seed from eight to eleven months. The spores are on the outside of the head when they are put into winter quarters and attack the seed plant the following year. The germs undoubtedly adhere to the surface of the seed, but no record is made of their injuring the seed in any way; however, the seed may be the means by which the disease is carried from one field to another.

The spores on the surface of the seed may be completely destroyed by sterilizing the seed with corrosive sublimate, one part to a thousand, or using formalin solution, one pound to thirty gallons of water. Of course, this destruction of the germs on the seed would not aid in the prevention of the disease where the rot was in the ground—and it remains in the ground for several years. The treatment of the seed with these disinfectant solutions should, of course, be made only a short time before it is planted, and it scarcely, if at all, affects the germination of the seed when properly done.

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Variation in Trees from Seed.

MR. CLARENCE WEDGE.

I do not know that it is generally known that the character of our forest trees varies fully as much as the character of some of our common farm crops. We might liken this variation to that of the common maize or corn, which comes, as you know, from a small dwarf growth that matures its crop on a stalk not above four feet high, while the southern corn will make a growth of ten, twelve to fifteen feet in maturing its crop. We nurserymen, and especially those who are growing forest trees for planting throughout the country, have very great difficulty in securing dependable seed. We want to get the best seed that will grow, the best type that will furnish in the future the best possible lumber as well as the best possible windbreaks for our people. We may be able to obtain a very fine strain of seed that will grow a first-class tree in every respect; then again we may obtain seed that will produce only scrubby, worthless trees, totally unfit for timber trees. Now, no one of us can afford to send to Europe to gather our seeds. The temptation is always present to gather seed where it is most available, from scrubby, low-growing trees, and it is much more difficult to gather seed from a better class of trees. So it is almost impossible to get seed such as we want regularly. When we consider that it requires a space of more than one generation's time to mature the product of this seed, we may see the necessity of using the utmost precaution in securing it.

Strawberries From Seed.

PROF. SAM'L B. GREEN.

Practically, strawberries are not raised from seed for commercial purposes, but all that are used for planting in an ordinary way are grown by divisions: that is, the runners are taken off of the old plants and set out, and from them come the new plants.

There are, however, classes of strawberries that come true or nearly true from seed. The old Alpine strawberries, both the white and the red, are what is known as ever-bearing strawberries, and are preferably grown from seed. It is a common belief among parties that grow them that they get more fruit when grown in this way than when grown from runners. This strawberry produces fruit for about two months. It does not bear much, but one might get about a cupful of fruit from a square rod at almost any time in summer and even so late as September.

About ten years ago Vilmorin-Andrieux & Co., of Paris, sent out a variety of strawberry known as St. Anthony de Padua. I saw this fruiting heavily in their trial grounds in 1900. This variety bears large fruit and comes practically true from seed. It is one of the ever-bearing sorts, and if the flowers are picked off in early spring fruit will be produced in August and September in considerable quantities. I could not recommend any one to raise this berry in a commercial way at present, but it is an interesting feature of the development of horticulture. I find this variety to have a reasonable degree of hardiness and to be fairly productive.

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IN MEMORIAM

Wm. Russell.

William Russell, State Bee Inspector, died Sunday, May 16, at the Thomas Hospital after an illness of three months. The latter part of January he fell a distance of twelve feet and received injuries which, complicated with a severe attack of grip, resulted in his death.

Mr. Russell was born in Cullen, Scotland, April 4, 1850. He came to Minneapolis in 1884 and took up his residence at Minnehaha Falls, where he remained until the time of his death. In 1890 he

took up bee-keeping as a business and devoted much time and study to the work, which he found very congenial. When the office of State Bee Inspector was created, Governor Johnson honored him with the appointment, and he was twice re-appointed.

In the death of Mr. Russell, the state loses one of its most enthusiastic workers for the interests of apiculture.

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Frank Moeser.

Passed April 11, 1908, age 72 years.

The subject of this sketch was born in Austria, Dec. 1, 1836. He came to this country with his parents in his eighteenth year, and they made a new home in La Crosse county, Wisconsin. Coming from a country where all kinds of fruit grew in abundance, their first thought, after getting a clearing in the heavily timbered region where they were located, was to plant some good fruit trees and secure a colony of bees. The nearest bee-keeper at that time lived some fifty miles across the Mississippi River in the state of Minnesota. Of this person they bought a colony of bees, and Mr. Moeser brought it home with great difficulty, carrying it a considerably part of the way upon his shoulder. There being no other conveyance handy he took it across the Mississippi River in a raft, carrying it with an ox team the rest of the way. This experience illustrates the primitive conditions under which the early settlers in the Northwest had to make their way.

As soon as possible they started an orchard on the new place with the usual disappointments from having planted varieties of trees coming from the east and not adapted to this climate. But preseverance at last had its reward, so that in 1885, when Mr. Moeser left there to make his home in Minnesota, they had one of the finest orchards in that section of the country. On the date above named Mr. Moeser removed to St. Louis Park, near Minneapolis, upon a small fruit farm, where he continued to live up to the time of his death. His chief industry during this period was bee-keeping and small fruit growing, in both of which arts he was very successful, being in love with the work and giving personal attention to its minutist details. He mastered very fully the art of producing comb honey, and for many years was one of the principal exhibitors of this product at the state fair.

In 1895 he first joined the State Horticultural Society, renewing his membership yearly thereafter up to the time of his death; and until failing health prevented his attendance he was always regularly to be seen at all the meetings of the society, ever intensely interested in anything relating to horticulture. He was never happier than when he could teach some novice the art of grafting or show him the road to success along any of the lines connected with his favorite pursuits.

Mr. Moeser was a great lover of nature and never so happy as when engaged in his favorite occupation, that brought him so nearly into the heart of things for which he had such a tender affection. In his family relations he was ever a kind and loving father and husband. None knew better than he how to make home life pleasant for those about him. In his business relations he was ever strictly honest and not from a sense of duty alone but because of his hatred for all kinds of iniquity and wrong.

In his passing we lose one of the most loyal members of the society and the locality where he lived one of the strongest pillars of good citizenship and righteous living. The writer understands that Mrs. Moeser and several children survive him, but only one of them is well known to us, Mrs. F. Jerabek, whose name for many years appears upon our roll as Miss Mary Moeser, a constant attendant at our meetings and an unfailing supporter of the society.—Secy.

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SECRETARY'S CORNER

MEMBERSHIP IN THE SOCIETY.—The annual membership at the date of writing, July 6th, numbers 2776; adding to this 223 life members brings the total membership up to 3009. Two new life members have been added to the roll since the last reference to this list in the Secretary's Corner, namely: John W. Maher, Devil's Lake, N. D., and L. E. Austin, Glencoe.

A NEW STATE BEE INSPECTOR—The press announces the appointment of Mr. Hamlin V. Poore, of Bird Island, a life member of this society, as state bee inspector in place of Mr. Wm. Russell, who died recently. This is an important office in view of the growing prevalence of foul brood in the apiaries of the state, and Mr. Poore can be depended upon to make the inspection one of practical value.

A LARGE MINNESOTA ORCHARD.—Plantings of apple trees in Minnesota are being made nowadays on quite a large scale. An orchard of eight hundred trees has just been planted by Mr. S. J. Walgren, at Hasty, Minn. It will be interesting to note plantings of large orchards from time to time, as such information reaches this office. Hasty is a little town on the west side of the Minnesota River in the northern corner of Wright county.

AN OLD MEMBER PASSES—A telephone message from Farminglon received June 16th announces the passing on the morning of that day of Mr. D. F. Akin, of Farmington. Mr. Akin has been a member of this society for a great many years, and for a long time a regular attendant at the meetings until declining health prevented his being with us. In his absence Mrs. Akin has represented him at the state fair and the meetings of the society with almost unvarying regularity. Mr. Akin died at the mature age of eighty-two years. His remains are interred at Hastings.

PEACH TREES AT SETH KENNEY'S.—Mr. Kenney expresses himself as highly pleased with the way his twenty-one small peach trees have wintered. Some of them the tops killed down three or four inches; in the case of others the limbs all wintered well even when not covered. They were well mulched during the winter with peat taken from a nearby marsh.

An interesting experiment Mr. Kenney is making this spring is the grafting of what he calls ironclad peach scions on wild plums, to see if the plum will work for the peach the same as the crab for large apples. We shall watch this experiment with interest.

HAVE YOU SEEN THE NEW STATE FAIR PREMIUM LIST?—This list is now out and has or should have been sent ere this, to all exhibitors at the state fair in 1909. Any members who are interested in this department are requested to send to Secretary C. N. Cosgrove, Hamline, Minn., for a copy, and turning to page 94 look over the list of premiums offered for fruits and flowers, which, considering the space allotted to these articles at the fair, is thought to be a liberal list. A blank entry sheet accompanies the premium list, which can be filled out and returned to Secretary Cosgrove with any entries that it may be desired to make. We hope for a number of new exhibitors in the horticultural department this year. Secretary Latham continues in charge of the department, and any matter connected with exhibits therein may be taken up with him directly.

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PREVENTING BLIGHT.—Mr. R. H. Johnson, of North Branch, Minn., has two remedies for blight, or, rather, preventatives. First: The tree must be set with extreme care so that the same side is presented to the south as in the nursery row where it originally grew. Second: Every two years after the tree has attained a diameter of one inch, with a sharp knife split the bark down with a straight cut on the northwest side of the tree from the largest branch to a point one or two inches under the ground. As the tree grows older, start higher up with the cutting where the branches have obtained a diameter of one inch. The best time to cut is just as the trees are budding out. Shade trees with stunted foliage may be treated in the same manner and will show the results in increased growth.

APPLE SEED FROM PERSIA.—Mr. Wm. T. Coe, a Minneapolis attorney, having a special interest in the development of Minnesota fruits has secured from Persia a quantity of seed of a variety of apple which has the reputation of being better than the generality growing there. Apples in Persia, according to the statement made by the consular agent at Teheran, Mr. John Tyler,—who sent this seed—do not as a rule cook very well, though the seed sent is from one of the better kinds. Part of this seed Mr. Coe has planted himself, and the balance has been sent to the superintendent of the State Fruit-Breeding Station, at Minnetonka.

An extract from another letter received by Mr. Coe from the Persian minister at Washington is also of special interest. It is as follows: "I have often been surprised at being asked, even by educated people in America, whether any fruits such as apples, peaches, etc., grew in Persia. How few know that Persia is the fatherland of the Arian race and that all varieties of fruits with very few exceptions are originally traceable to Persia, not to mention that most of them have been transplanted from Persia into the western lands, including America. Persia is really a fruit garden where even in the woods delicious fruits, such as figs, pomegranates and every other variety, grow wild."

THE MINNESOTA SCHOOL OF FORESTRY AND THE STATE LEGISLATURE.—The late state legislature has made liberal provision for the Minnesota Forest School, which was inaugurated in Itasca State Park last summer. Practically the sum of $9,000 was appropriated annually for this school, though the appropriation appears in two or three sub-divisions. There was also an appropriation of $10,000 for the construction of a good road from Park Rapids to the State Park, a distance of twenty miles, making that region more accessible. A further appropriation of $800 per annum for ten years was made to pay the taxes upon a tract of land in the park which was donated to the state for park purposes with the understanding that the taxes should be paid by the state until certain portions of the merchantable timber were removed. Besides the above some $5,000 or $6,000 was appropriated for roads and other improvements in the park.

Nature has done very much for this section, and with the construction of suitable roads running through the the park, opening up here and there a view, making the region available for park purposes, it will be indeed an interesting spot to visit and remain with for a time, as the writer well knows from a short visit there a year ago.

An appropriation of $5,000 was also made to pay for certain lands in a forest reserve near Cloquet, Minn., and $2,500 annually for maintenance, much of which latter amount is available for student labor in connection with the Forest School.

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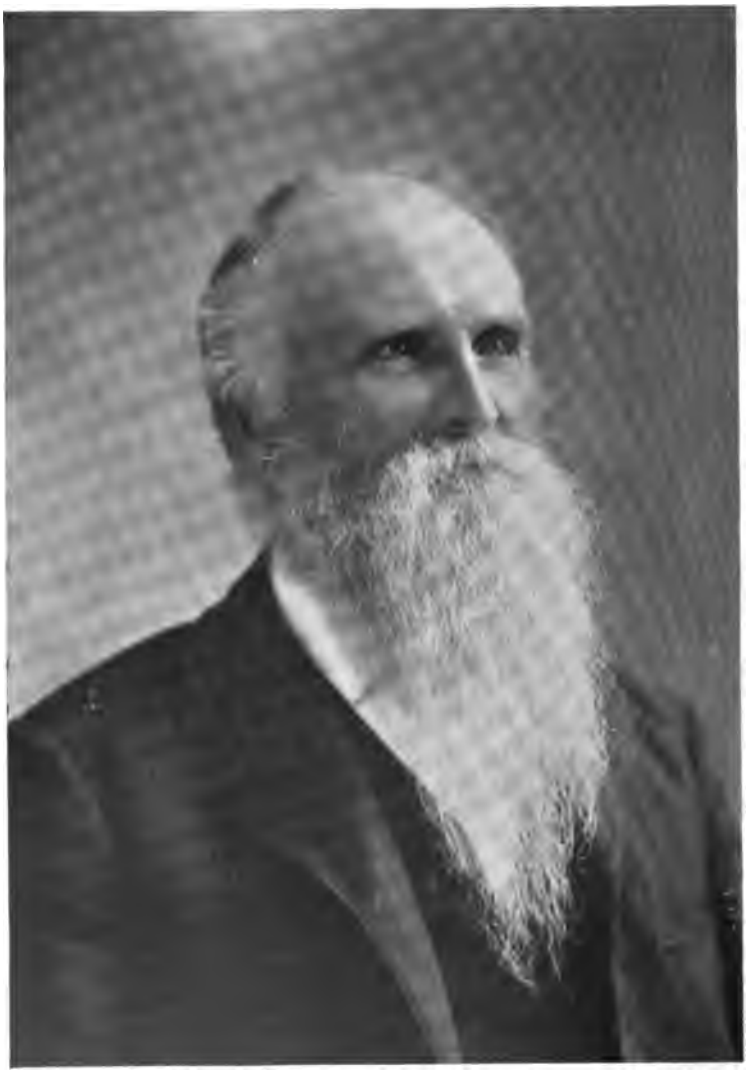

ALONZO D. LEACH,
Late of Excelsior, Minn.

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THE MINNESOTA HORTICULTURIST

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IN MEMORIAM

A. D. Leach

Passed Jan. 12, 1909, aged 73 years.

Alonzo D. Leach was born at East Burke, Vt., July 11, 1835. At the age of twenty-one years he came to Excelsior, Minnesota, one of the pioneer settlers of this country. In 1859 he was united in marriage with Miss Rhoda Aldritt. He then purchased the farm where they made their home, a most beautiful spot on the north shore of Lake Minnewashta, not far from Excelsior, where they lived most happily for more than forty-four years.

In February, 1903, Mrs. Leach passed away. In December of the same year Mr. Leach was married to Mrs. Mary Foster, who survives him.

Mr. Leach was a veteran of the Civil War, having enlisted in the 9th Minn. in 1864, and served until the close of the war. He was a member of the Universalist church, and ever a true, earnest Christian. His life was one of energy, integrity and devotion to duty. His cheerful, kindly, generous ways made for him many sincere friends.

Mr. Leach was for many years an active and especially interested member of the Minnesota State Horticultural Society, always giving all that he could toward its success. For years he was a constant exhibitor of fruits at the state fair.

He was a passionate lover of the beautiful. During the years after he had given up the hard farm labor, he gave his time and attention to the work that he enjoyed most—fruit and flower culture, and his little home vegetable garden. From the time that the first buds began to open in early spring until the frosts of winter had taken every leaf, he would rise at daylight and work in the garden and orchards about his home, spraying, pruning, grafting, cultivating, tending his

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plants, and enjoying to the utmost every beauty that came before him, enjoying his work and the evening of rest and contentment afterward.

Mr. Leach's health had been failing for a number of years, and during the past year he had been unable to leave the house, and suffered much. Besides his widow, Mrs. Mary F., he leaves two sons, Wesley J. and George M. Leach, and a daughter, Mrs. W. A. Wilson, all living near the old home at Lake Minnewashta.—Secy.

Uniformity in Fruit Package

R. A. WRIGHT, EXCELSIOR.

This subject of uniformity of fruit packages is important to the general public and should have the careful consideration of every fruit grower. On investigation I find that many sizes and styles of fruit packages are handled on our Twin City markets, being shipped in from other states as well as Minnesota. I am glad to note that the majority of the packages are of the standard size and style. However, there are quite a number of shippers who constantly strive to take advantage of the general public, as well as their competitors, by placing their fruit upon the market in packages of scant or short measure. To illustrate: The most of our early strawberries are shipped from the south in boxes that hold considerably less than the standard box. I am informed by some of our leading commission merchants that some Wisconsin fruit growers shipped their strawberries to this market in very scant quart boxes the past season. To those who purchase blueberries this short measurement is very much in evidence. The blueberry quart box has from year to year been reduced from the standard size, until at present it holds but a trifle over a pint. The quart box is not alone in this matter of reduced size; the pint box is undergoing the same experience and is now placed upon the market in three sizes, numbered one, two and three, number one being the standard size, two and three each a trifle smaller than the other.

This unfair condition does not stop with the shipper. The past season has revealed how scant measures are taken advantage of by a class of middlemen called the Sheenies. These men provide themselves with a quantity of the short boxes; they buy their fruit in the standard box on the market, take it around the corner or to some retired place near by and change the fruit from the standard box into the ones of reduced size. They then sell the fruit from house to house at a price slightly reduced from that of the grocer, who should

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have this trade. The price has not been reduced as much as it should have been for the shortage, and the customer pays for more fruit than he gets.

In considering the larger fruit packages, we find the same state of affairs exists with both apple barrels and boxes. About three different sizes of each are to be found on the market. The apple box which has been used in Minnesota but a short time, comparatively speaking, has been subjected to the shortening process, there having been apples shipped the past season to the market in this city in boxes which held but little more than two-thirds of a bushel. I regret to add that these apples were shipped by a fruit grower of Minnesota. It is the opinion of some of our leading commission men and merchants that some decided measure should be taken to put a stop to this growing evil and that it should be made a misdemeanor.

As to the best package for our Minnesota apples there is a diversity of opinion. Some of the leading commission merchants favor the barrel only. Others and the grocerymen say the bushel box is by far the best package for Minnesota apples because of the lack of keeping qualities in our apples. The most of their customers prefer to buy our apples a bushel at a time for the reason that they do not keep well. The box is also a neat package and easily handled, ships well, takes up little room and is convenient in all ways. Besides experts at Washington say apples will keep better and longer packed in boxes than in barrels.

Quoting from a paper written by Claud I. Lewis, professor of horticulture at the Cornvallis station, we read: "In buying boxes select the best on the market. Cheap boxes are often worthless. You will need two sizes. The standard box has the following inside measurements: 10½x11½x18 inches; the special box measures 10x10x20. It is an advantage to have both sizes, as some apples do not pack well in the standard box but will pack very nicely in the special. These boxes should have three-quarter inch material for ends, three-eighths inch for sides and one-quarter inch for top and bottom. Experience has shown these measurements to be the best to avoid splitting and bruising of the fruit and to allow for necessary elasticity.

"Next you need a good supply of paper. Lining paper should always be used on all good grades of fruit. It requires two sheets to the box. This paper is very light in weight. If using the boxes for both sizes, remember this in placing orders for lining paper. This

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paper assists materially in keeping fruit clean and in taking up surplus moisture. Layer paper should also be used. This comes in two sizes and is very valuable in soaking up any excess of moisture that might otherwise assist decay. This paper should be used in the bottom and top of the box and between the layers. Wrapping paper should be obtained, and the 8x10 size is the more commonly used. This paper aids one in putting up a solid pack and protects the fruit from bruising, slipping, etc. Experiments conducted the past two years at this station have shown conclusively that fruit that is wrapped keeps much better than that which is not. Again, when the paper is used, it conveys to the buyer the thought that he has a superior article.

"A good supply of nails should be obtained. The cement coated No. 5 box nails are the best. Never use poor nails, as it may mean the loss of fruit. Where a large amount of fancy fruit is used, it is a very good plan to use a lithograph label of your own. This advertises your fruit and generally pays in the end."

We find the apple box is used entirely in the apple growing states of the west. The boxes used in different states vary a little in size. However, the majority of the boxes used are of the standard size and made according to the measurements given in the article by C. I. Lewis.

The Northwestern Fruit Growers' Association, of the state of Washington, have adopted and are using the following styles of apple package, which will be seen to be the same as those given by Prof. Lewis, of the state of New York: namely, 10½x11½x18 and 10x10x 20 inside measurement.

The purpose of this paper is to show some of the weak points in our present line of fruit packages and to show the need of some definite action by this society to better conditions. To show you that other sections are having to meet this same question, I will quote from a bill proposed at the shippers' meeting in the state of New York. The fruit growers of this city and vicinity are deeply interested in the new bill which was approved by the International Apple Shippers' Association at its meeting in Niagara Falls this week, to supplant the Porter bill dealing with the subject of apple packages. While this bill was formulated at a conference of representatives of the horticultural societies of the state, the bill will be submitted for official consideration at the next meeting of the Western New York Horticultural Society and New York State Fruit Growers' Association. I quote from sections three and four: "In this act the following classification for closed packages of apples shall be adopted as standard packages. The standard measure of capacity for all apples packed in boxes shall

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be a box of the following dimensions, 11½x12x18½, inside measurement, and containing as near as may be two thousand five hundred and fifty-three cubic inches. Any box of the above described capacity or dimensions shall be a standard box. Any box of less dimensions or capacity shall be marked in a plain and indelible manner, both on the sides and top in letters not less than one inch long 'SHORT BOX.' Any person who uses closed packages for apples intended for interstate or foreign shipment that are not standard and who wilfully neglects to mark them as designated in this act shall be subject to a penalty of not less than twenty-five cents, nor more than one dollar for each package so used."

Should this society deem it wise to adopt a uniform size of fruit package and have it incorporated in a state law, would it not be better for all concerned? When the temptation to shrink the package is eliminated and the honest measure is the only measure, confidence will be established in the fruit trade. When this condition is brought about it will be of advantage to all fruit growers, middlemen and consumers.

Mr. A. Brackett: This paper is something we must profit by. If we are going to grow fruit, we must have a uniform package. We have got to put up fruit in a package that the public will have confidence in. I have an apple here that if we could raise apples like, year after year, we would have a reputation, and people would not object to paying for fruit like that. We can say in this business as in other things that there is always room at the top. If a man puts up the best quality, he will always have a market for his products and he will establish a reputation. The man who puts up inferior fruit and puts it up in an inferior way will never make a reputation in his line of business. This apple I hold in my hand is a Jonathan apple, and it brings on the Minneapolis market $2.50 per box. The freight on this apple from the place where it was grown to this city is 40c per bu. box. You say that does not benefit us any. Here is an apple raised right here which if put up the way this Jonathan apple is put up, you would have no trouble in selling for $2.00 on the market. You could sell any amount you could raise right here in Minneapolis. We have got to adopt these packages so that they will be uniform and so that we can display our fruit to the best advantage for sale.

When people buy fruit of any kind and they are perfectly satisfied, they will want some more of the same kind the next year. They must know when they get it that it is just what they want and that it is the same all the way through. As has been said, we have too many laws already that are not enforced, and I have an idea if we should

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make such a law it would not be enforced, but I am sure that if we put up our fruit the way it should be there would be no need for such a law, because fruit put up in that way would solve this question without any further action. (Applause.)

Mr. Owen: I would like to inquire what the difficulties are in the way of selling these various products by the pound, by weight. The subject was brought up here, but nothing came of it, and there must be some reason that I cannot comprehend. I would like to know what it is.

Mr. Wright: The main reason is that the custom we have been following is wrong. We have got to change the custom. It is the custom to shorten the boxes. So it seems we must make a change of some kind. If we had a law stating what should be the standard size package, it seems that that would cover the question, whether sold by the pound or the box. As Mr. Underwood said, a few years ago when berries were placed on the market the boxes were nearly all of one size, that is, the standard wine quart, and that held a little less than the dry quart.

The raising of the bottom of the box has been spoken of, and I wish to say that that is done for the purpose of giving room to fill up the boxes; the bottom must be set up so that it will not rest flat on top of the box below. That is one reason for the raised bottom so that the boxes may be heaped up without having the fruit crushed by other boxes placed on top. That is why a space is left on the top. But for the last ten years factories have been putting the bottoms up a little higher, and it is just a case of one man taking advantage in his trade over another. I believe the measure we have discussed here is much to the point.

Mr. Owen: What I am trying to get at is justice to the consumer. If the consumer in this city buys a box of fruit, he wants to buy a quart, and with these boxes there is abundant opportunity to give him short measure in spite of any law that may be passed. Putting one more potato or one more apple on the measure makes a good deal of difference; if sold by the pound there would be no difference, the consumer would get what he pays for. I am pleading for the consumer, I am trying to find out why he cannot get what he pays for without any relation to the size of the package.

Col. C. W. Gurney: (S. D.): We do not have to go to California to find where they sell fruit and other products by the pound. You will find it done in your sister state of South Dakota. In the Black Hills I know that frequently we find them selling fruit that way, and

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we find there is very little complaint where fruit is sold in that manner. It was an odd experience to me, and I took pains to inquire how they happened to introduce it in such a large area, and I understand it was simply a case where one started and another one followed. They are following a custom now, and it can't be changed. Potatoes, apples and grapes, and everything of that kind, are now sold by the pound.

Mr. Geo. J. Kellogg: (Wis.): The question is how are you going to weigh some of these things? In the case of strawberries you buy them by the quart or by the box. If you were to weigh them how would you go about to do it? You can furnish 16 quarts to a crate at a private house, but if you have to weigh each of those quarts to come up to the standard weight how would you go about it? I think we will have to compel them to fill up their quarts so they will come up to the standard weight. We have got to have a better class of grocerymen. We bring them in some berries, and they take them to the back end of the store and take out the best berries, then turn the fruit out into other boxes and put the big berries on top. Sometimes they will make an extra quart by handling over a crate. We have got to have better grocerymen.

Canada's Fruit Package Law.

S. M. OWEN, MINNEAPOLIS.

The secretary has given me a very easy task, one that requires no ability beyond that of knowing how to read, for in presenting to you the "fruit marks act" of Canada, I need only read to you sufficient provisions of the law to give you an intelligent comprehension of it. I may, however, if time permits, make a few remarks regarding personal observations on the observance of the law which I was permitted to make recently.

I will now read from the law such extracts as are essential to the purpose of this part of your program:

"Every person who * * * packs fruit in a closed package, intended for sale, shall cause the package to be marked * * * in letters not less than half an inch in length.

"a. With his full name and address. * * *

"b. With the name of the variety. * * *

"c. With the designation of the grade of fruit, which shall include one of the following four marks, viz.: Fancy, No. 1, No. 2, No. 3."

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(These grades are described in detail in the law.)

"Whenever any fruit in any package is found to be so packed that the faced or shown surface gives a false representation of the contents of the package, any inspector charged with the enforcement of this part, may mark the words 'falsely packed' in a plain and indelible manner on the package.

"All apples packed in Canada for export for sale by the barrel * * * shall be packed in good and strong barrels of seasoned wood having dimensions not less than the following, namely: Twenty-six inches and one-fourth between the heads, inside measure, and a head diameter of seventeen inches, and a middle diameter of eighteen inches and one-half, representing as nearly as possible ninety-six quarts.

"When apples are packed in Canada for export for sale by the box, they shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall not be less than ten inches in depth, eleven inches in width and twenty inches in length, representing as nearly as possible two thousand two hundred cubic inches.

"Every box of berries * * * offered for sale * * * in Canada shall be plainly marked on the side of the box, in black letters at least half an inch square with the word 'SHORT' unless it contains when level full as nearly exactly as practicable:

"a. At least four-fifths of a quart; or,

"b. Two-fifths of a quart.

"Every basket of fruit offered for sale in Canada, unless stamped on the side plainly in black letters * * * with the word 'Quart' * * * preceded with the minimum number of quarts * * * which the basket will hold when level full shall contain one or other of the following quantities:

"a. Fifteen quarts or more.

"b. Eleven quarts. * * *.

"c. Six quarts. * * *.

"d. Two and two-fifths quarts. * * *

"Every person who offers or exposes for sale * * * apples pears or quinces, by the barrel or box, otherwise than in accordance with the foregoing provisions * * * shall be liable, on summary conviction, to a penalty of twenty-five cents for each barrel or box of apples, etc., so offered. * * *"

(A similar penalty is provided for berries.)

Last summer I was in the finest fruit growing regions of eastern Canada, and was able to see this law in operation in the selling of berries, the only fruit being marketed at the time. I saw berries packed

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for shipment, saw them peddled from house to house in boxes and baskets, saw them in grocery and fruit stores, and in every case I was gratified to see that the law was strictly complied with. And it surprised me to see how much larger the Canadian berry quart is than that of the states. In market houses I saw berries in bulk being measured out to buyers, and the generous looking quarts and pints made me feel that the liberality of the market women was not wholly law-made; made me feel that among those people, whom we of the states regard as simple in their customs, non-progressive and lacking in the strenuosity which we are so proud to boast of, such legal provisions as I have read to you have less justification for existing than among some other people which pride of country forbids the mention of.

I have mentioned the strict observance of the provision of the fruit packing and selling law in Canada. I have found during extensive travels in that Dominion that law observance is not confined to its fruit law but to all laws. Laws there are enacted to be obeyed, as they are in every other country I have visited. The United States seems to be an exception in this respect. I am sure I am warranted in saying that in no other country is the appetite for new laws, more laws, myriads of laws, so voracious as in this one, and in none is the indifference to law enforcement so pronounced as here. In other countries laws are enacted to be enforced, but here to be forgotten.

It would gratify me, and possibly would interest you, to give some account of my visit to the great fruit regions of Nova Scotia, especially the valleys of Annapolis Royal, Cornwallis and Minas, all within the latitude of central Minnesota, but so protected by embracing mountains or lofty hills, and so environed by neighboring salt seas, so enriched by the washings of ages from hills into the valleys, that the last are made as nearly ideal for fruit production as can well be imagined. Cherry trees are seen bordering the highways so large that their branches and foliage canopy the roadway.

I was in one orchard of 1,100 acres, a literal wilderness of fruit. Another fruit farm was said to contain—I didn't count them—5,600 apple trees, 1,000 pear trees, 1,500 plum trees, fifty acres of strawberries, ten acres of raspberries and blueberries, and a frost-proof warehouse with a capacity of 10,000 barrels.

Optimistic Nova Scotians are looking forward to the time when the valleys named will produce $30,000,000 worth of fruit annually, and to the traveler through the region the hope of the natives seems a reasonable one.

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It may be said in this connection that realization of the hope is stronger by reason of the system of packing and marking fruit now universally practiced. Canadian fruit goes to England largely and is bought eagerly by consumers there, who know that the marks on each package constitute a guarantee of the quality within.

It seems to me that the lesson of all this to us is self-evident. If we would have our fruits inspire the confidence of buyers everywhere, and stand high in their regard; if we, in marketing our fruits, desire to be deemed guiltless of deceit or guile of every form or in any degree; if we would be as willing to give full measure fruit as we are insistent upon getting full measure dollars in return; if we deem it the best business policy to make the top row in every package of fruit fairly representative of its entire contents—then we will, without law's compulsion, do what is done by Canadians under the law's direction. But if all fruit growers cannot be kept in the straight and narrow path except under the lash of legal penalties, then those who are honest should be protected from the dishonest or, to use a milder term, the careless or indifferent, by stringent law rigidly enforced.

It might interest you to be told something of beautiful Evangeline land, and of a visit to the central village of the Acadians, historic Grand Pre, where, a century and a half ago, was enacted one of the most pathetic tradegies of history, in kind if not in degree. And I feel quite sure that you would be interested in learning some things of the wonderful tides of the Bay of Fundy, which rise to a height of from thirty to fifty, sixty and at times seventy feet, twice every twenty-four hours, presenting spectacles seen nowhere else in the world. But these things are apart from my subject and, therefore, must go without further mention.

Mr. J. M. Underwood: When we first commenced growing fruit in Minnesota it was our practice to pack our berries in full quarts. We always bought that kind of boxes and used them for many years until we found that the markets in the twin cities were supplied with what was known as the short quart and commission men did not really want our full quart boxes; then also we did not get any more for a full quart than others did for the short quart. So after a little time we got to using the short quarts just the same as everybody else did. I suppose when people buy raspberries or strawberries they buy them by the box and not by the pint or quart—however, I think the Canadian fruit marks act is a step in the right direction. We should have legislation to control this matter and that legislation should control the markets

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all over the United States. I have been impressed while listening to what Mr. Owen has to say on this subject with the thought that this society should take the initiative in bringing about that result. Therefore I would move you that our secretary should be instructed to have a law drafted that would cover this case, that is, secure the services of some competent lawyer or legislator, who will understand how to bring it about, to draft a bill to be presented during the present session of Congress that would cover this case, and have it similar to the one of the Canadian Fruit Act. And also that the officers of the various horticultural societies of the United States be urged to support the bill, to include the American Pomological Society. When I first thought of this proposition I thought possibly that we ought to ask the American Pomological Society to take the initiative, but I feel that we might get more prompt results if it were to emanate from this society, and then we should also get the credit for the act. I think therefore it would be better to have the bill drafted under the direction of this society and ask our congressmen to support the bill. I will offer that as a motion.

The President: As I understand the resolution it is to the effect that the secretary is instructed to draw up a form of a bill somewhat along the line of the Canadian Fruit Marks Act and do what he can to secure the adoption of that bill by Congress, that is, try to have it enacted into a national law.

Mr. Underwood: Our senators, that is Senators Clapp and Nelson, and our representatives in Congress, some one of them, could be interested in the introduction of this bill in Congress and secure the support of other members, and the secretary of this society could correspond with the officers of the American Pomological Society and with other State Horticultural Societies asking them to communicate with their congressmen and request them to support the bill.

Mr. R. A. Wright: New York has taken up this matter and will have a bill of similar nature introduced in Congress. It will take considerable backing to get such a bill through Congress, and many of you will remember that three or four years ago the commission men in our own state opposed such a bill when it was introduced in the legislature. We did not have the backing we ought to have had, and if you introduce another bill of the same kind you will find that you have a fight on your hands.

The President: This state could not set up a standard for the other states. That is where the difficulty lay.

Mr. Radabaugh: Can the United States enact a law governing states in such a matter?

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Mr. A. B. Coleman: Several years ago a bill was presented in this state, and the commission men fought it. It came very near passing. It was a bill compelling Minnesota growers to use standard quarts, but the trouble was southern growers could bring in anything they wished.

Mr. Underwood: Clearly that would be unconstitutional. You cannot pass a law compelling one state to abide by the law made by another state. If we could draft a bill that would be adopted generally by all the states it would be better than to draft a bill to be presented to Congress. Probably we shall find whether it is constitutional or not before it is presented. If it is found unconstitutional there is no use in presenting it, but if it is not I see no reason for not urging it.

Mr. Smith: It would be difficult to prevent fruit packages from other states coming in under the state law. A national law if enacted would present no such difficulty.

The motion offered by Mr. Underwood, having been duly seconded, was put to a vote and prevailed unanimously.

Mr. Geo. J. Kellogg, (Wis.): The Michigan box holds a liquid quart; you round it up, and it holds a dry quart. We do get smaller boxes from the south; they are not quarts, they are only wine measure quarts, but the smallest fruit box and package I have ever seen is in the California basket, that holds just twelve ounces. A quart of berries should weigh a pound, not twelve ounces or three-quarters of a pound, but that is the size of the California basket. I believe our Michigan boxes are the nicest kind of packages when properly filled. We have to adopt the plan of putting the big berries in the bottom to prevent the commission men from eating them off the top of the boxes. (Laughter.)

Mr. S. M. Owen: The suggestion he makes here about a pound is an excellent one, and I am inclined to think this problem would be almost entirely solved if we should handle all of our fruits and practically all of our products by the pound, as they do in California and other places. (Applause.) Then they would have to use the scale, and we would have scale inspectors to test the scales for us all the time. Fruit should be sold by the pound. Where it is so sold it is satisfactory; there is no question about the size of quarts or any contention in paying for it. The same thing is true not only of flour but of eggs. The only just way is to sell eggs by the pound. People would not undertake to sell anything else that way, grain for instance. Here is a dozen eggs that weight twenty-five percent more than another

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dozen, but their price is just the same. If a man were to ask the same price for a bushel of grain that weighed thirty-five per cent less than the legal weight, he would not do much business. It is just as absurd to sell eggs in that way as it would be to sell grain. I am in favor of a law providing that fruit shall be sold by weight.

Mr. Probstfield: What we want is an honest quart. If we sell a quart of fruit, we ought to be paid for a quart. I do not see why our commission men should cater to the opposition to this bill; that will not help anything, because if they do not grow fruit they buy it, and they have an interest in buying a full quart.

The Economic Value of the Norway Poplar.

EMIL SAHLER, WASECA.

My personal experience with the Norway poplar has extended over twenty years. I have become firmly convinced that this tree is one of the most valuable, if not the most valuable, of all trees grown in the Northwest. It grows in almost any soil and climate with little or no care and grows quickly, obtaining a diameter of from six to ten inches in from eight to nine years. It makes an exceedingly fine windbreak and protector and an excellent shade tree.

Aside from all this the wood of the Norway poplar can be used for a number of purposes. It makes excellent fuel, and when converted into lumber, the uses it can be put to are almost unlimited. The lumber from this tree is stronger than pine and has been used by me for cattle fences, hog fences and in repairing sheds on my farm. It will also make planks for barn flooring and bridge work. It can also be used for all kinds of inside finish, such as flooring, sash, ceiling, wainscoting, lathing, studding, rafter and roof boards, and even good siding can be made from these trees. This timber now to some extent is used in the manufacture of apple barrels, flour barrels, butter workers, berry boxes of all kinds, churns, wagon and buggy boxes, and in time will come to be used in large quantities for those purposes. as the wood is well adapted for this use. When boards can be made sixteen inches wide, the lumber will be worth $65.00 per 1,000 feet. I have converted some of my Norway poplar trees into lumber and have used it for a good many purposes on the farm. Out of one fifteen-year-old tree I have cut four planks 2x8 14 feet long, and from the same tree out of the second joint eleven boards 1x5 14 feet long, and have made up the limbs and tops into firewood, amounting to

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about one-half a cord. It splits easily—as easily as butternut. Out of one nine-year-old tree I have cut five pieces 1x5 12 feet long, and from the second joint of the same tree four boards 1x4 10 feet long, and used the limbs and tops for firewood. Where the tree gets thinner further up, it can be used for lath, etc.

Out of this fifteen-year-old tree, which had no cultivation whatever, I sawed 132 feet of plank and fencing, which at $25 per thousand would be worth $3.30 for this tree. At this rate an acre of Norway poplar, planted to 320 trees, being planted 10x10 feet, would yield in fifteen years $1,056.00 in lumber besides the tops and limbs. Out of the nine-year-old tree I cut 81 feet of fencing, which at $25 per thousand would be worth $2.02. At this rate an acre of land planted to 320 trees would yield in nine years $646.40, besides the immense amount of firewood from the limbs and tops. The Norway poplar is a very valuable tree to have.

As already stated, this tree will grow on any soil, my grove being on black loam. I should advise that any farmer wishing to plant these trees in any number plant them 4x5 feet each way, which will be plenty of room until the trees are eight or nine years old, when they will be from six to ten inches in diameter, and then cut out every other tree. In this way an immense amount of wood could be grown on one acre in eight or nine years' time, and some lumber could be cut from the larger trees. This would insure two good crops in from twelve to firteen years' time. Good 4 inch fencing can be made off from 7 to 9 inch thick trees.

As already stated, in the northwestern part of our country, where by reason of the scarcity of lumber it is very desirable to have a tree that will grow quickly and one which at the same time can be converted into and used for lumber, the Norway poplar is a very valuable tree. The grain of the Norway poplar is very smooth and has a nice finish when planed. The wood is of a white color when dry; it does not warp. I have for exhibit one board which is shade dried and another that has been sun dried, and there is no difference in color or shade of the wood. When nails are driven in, it does not crack. I am using the wood for posts. The trees grow up straight; they make excellent sweeps on ditching machines. I have used them now over a year on my ditching machine. The poles are peeled off and are very stiff for this purpose; they will not bend and are better than oak. My sweeps are twenty-two feet long, and three horses pull on one end of it.

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Does it pay to grow trees? One of my neighbors cut off one acre of trees, which were planted quite far apart about thirty years ago. He had them sawed into lumber, and he sawed out 27,000 feet, which at the price of $30 per thousand would bring $810 per acre. This was a very good profit with no labor or other expense except planting and cultivating.

The Norway poplar also makes good pulp for paper. The Washington (D. C.) Experiment Station says that the Norway poplar is the best of the soft wood varieties, that it makes the best pulp for

Norway poplar, 9 years old, 58 feet high. View taken May 1st, before the foilage was well out. Mr. Emil Sahler and daughter.

paper. Several years ago I sent cuttings to Washington, D. C., to the Forestry Experiment Station, and there the Norway poplar was highly recommended to be a very valuable tree. The Nebraska Experiment Station of Forestry have the Norway poplar on trial, and Mr. C. S. Harrison, of Nebraska, says it is the best of all the poplar family.

The Norway poplar should be grown on every farm in the United States, and great care should be taken to get true to name the Norway poplar to plant. The Minnesota Forestry Experiment Station have

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the Norway poplar in their trial station, and they have the wood of it there, as I sent them some blocks off from full grown trees. I think the time is coming when it will be used for telephone posts. I have now used the planks for bridge and dump board for two years. I am pleased to know it to be the coming lumber, and the best of it is we can beat the lumber trust by growing it ourselves. It stands to reason that the economic uses of the Norway poplar tree make it a valuable tree to plant. It is valuable also because it can be grown quickly into a windbreak around our homes and orchards, and in cases of severe storms is great protection from harm to buildings and stock, and this windbreak can be grown in from two to four years from planting, as it grows in that time from twelve to twenty-five feet high. I have a tree here on exhibit two years old from the cutting which is eleven feet high, and I have one top of this year's growth that grew eight feet and seven inches. How is that for Minnesota? It is valuable because when our farms are well supplied with good groves and windbreaks, it raises the prices of our farms from $2,000 to $3,000 or more. If we farmers can double the price on an acre of land by growing a windbreak we would be very unwise if we did not do it.

This tree is valuable, can be grown on a small piece of ground and after two or three years' growth it can be transplanted to any kind of soil, even in the wildest kind of prairie land that never was broke. I planted them on the roadside some eleven years ago, and the trees have grown remarkably well. It is valuable because it is easy to grow. It is valuable because it makes a nice, clean lawn shade tree, having very large and even tops and has no cotton on it like the cottonwood has.

Direction for planting the cuttings: I soak my cuttings under water for six or eight days before I plant them, and in this way I find they will all grow. Then I have the ground pulverized ready to plant and then put the cutting five inches into the ground, putting the thick end in the ground first and leaving one or two buds out of the ground. Cultivate for two or three years, the same as for corn; then they need no further cultivation.

Mr. Grant: It looks to me like the Poplar Canadensis.

Prof. Shaw: I want to bear testimony to the value of that paper. It is one of the most encouraging features in this line I know of, and steps should be taken to have a copy of that paper reach every farmer in the Northwest.

Mr. Clarence Wedge: I would like to ask Mr. Sahler whether he has tried the Norway poplar and the cottonwood under the same treatment, and whether he finds there is a very distinct difference in their inclination to work up in good shape.

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Mr. Sahler: I have seen them grow almost side by side.

Mr. E. A. Smith: Did I understand Mr. Sahler to say in his paper it is $65.00 a thousand feet?

Mr, Sahler: If it can be raised sixteen to eighteen inches through; that is, boards sixteen to eighteen inches wide.

Mr. Smith: Where will you get that price?

Mr. Sahler: I went to a St. Paul wagon company and they showed me lumber for which they had paid $65.00 a thousand, and that is whitewood, which is the same thing as this. This stick of wood (indicating) grew thirty-five feet above the ground, the tree is thirteen years old, the lumber is very smooth and planes like regular poplar.

Capt. A. H. Reed: What is the difference between the Norway poplar and the Carolina poplar?

Mr. Sahler: As much as I know about it and from what I have been told by others, the Norway poplar has a large, dark green leaf, and it has a dark green stem. The Carolina poplar has a sort of a reddish stem and a reddish tip running through the leaf, and the leaf is not such a dark green as that of the Norway poplar.

Mr. Geo. H. Whiting (S. D.): There seems to be quite a difference of opinion in regard to this Norway poplar. There seems to be a difference in the locality where it is grown. I have had the Norway poplar ever since 1882. I got my cuttings from a man named Odell, who used to live in Waseca county, in Minnesota, one of the oldest settlers in the state, and he recommended that to me as being a good tree, as being very much preferable to our native cottonwood in South Dakota. I planted them in Moody county, where I lived for some years, and when I moved to Yankton I dug some and planted them beside the cottonwood. I think I had four rows of Norway poplar and two rows of cottonwood. I gave them the same care and put them under the same condition as nearly as possible. Fourteen years later I wanted to get those trees out of the way. I sawed those trees off close to the ground and cut them up into lumber. The cottonwood made at least one-fourth more lumber and much better lumber in every way than the Norway poplar. I can say truthfully, and I know from experience, that the Norway cannot "rustle" with the native cottonwood in South Dakota. It does not grow as fast, and I do not think it is adapted to the conditions. This Norway poplar might do better in Minnesota than the cottonwood, but it does not do so well with us. In regard to the quality of lumber I sawed: I did not like its appearance as well as that of the cottonwood, but I made it into dimension stuff and piled it in with my cottonwood lumber. I do not know much in regard to the quality of the finish, and I do not know how it is in regard to working up. That is one great difficulty with our cottonwood lumber—it is bad to work up. If the Norway poplar will work up well and is capable of a good finish, it certainly is ahead of the cottonwood in that respect. Again the Norway poplar and the Carolina are very similar, and very few people except in the nursery can tell them apart. You can see the difference in the

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row. I think the difficulty in telling the difference is the cause for so many getting the Carolina poplar for the Norway. I would like to know if any one is present who knows anything about the value of the Carolina poplar as a lumber tree. There does not seem to be much difference, but in the long run, I think, the Carolina poplar will go ahead of the Norway. For the first two years there does not seem to be much difference. I would like to know if there is any one here who has made use of the Carolina poplar in the way of cutting it up into lumber.

Mr. C. E. Older: A gentleman in Ohio wrote me and said he had been employed by South America for two years in investigating the lumber industries. He said the Carolina poplar came originally from France, and for lumber purposes there it is grown by the thousand acres, and he said it was very successful for lumber purposes in that country. He said he saw no reason why the Norway poplar, the common Norway poplar, in this country should not take the place of the Carolina poplar in South America. He said he thought it was one of the coming trees and should be very valuable for lumber.

Mr. A. Brackett: I think the question of the difference between these two poplars should be settled today as nearly as we can settle it. Mr. Cashman is here, who is thoroughly posted in the growing of these trees, which I believe to be identically the same, and I would like to hear from Mr. Cashman.

Mr. Thos. Cashman: We have these trees growing side by side. Sometimes I have thought I could see a little difference, but again I could not see any. The growth of the trees seem to be identical. The habits seem to be the same, the shape and size of the leaf are the same, but several times I have thought that the color of the leaf of the so-called Norway was a little bit darker. As far as the value of the trees is concerned, there is no difference. Both are good, and I think are worthy of a place in every farmer's yard in this country. As to the texture of the wood, they are of the cottonwood species, and I think there is but little difference in any of them. They will all take a fair finish for inside work, but for outside purposes I do not think they would be valuable except for dimension stuff. The chief value of the tree lies in its rapid growth. The planter can grow a large number in a short time, and obtain a practical value from them in a short time, but when it comes to saying that there is a difference in the two varieties, I can see but little; in fact I do not know that there is any difference.

Mr. Smith: Has this tree (referring to the exhibit) been grown as an individual specimen? Did it receive any special care and cultivation?

Mr. Sahler: This was grown in the nursery row, sixteen feet apart one way and four feet the other way.

Mr. Smith: We secured some Norway poplar from Mr. Sahler several years ago and planted them side by side with the Carolina poplar, and with us the Carolina poplar made a little stronger growth.

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There is a difference in the leaf. The Carolina poplar has a red vein, and the stem is red, but the Norway poplar has a lighter color, and there is an impression out that the Norway is more hardy.

Mr. F. J. Cowles: Are they any better than willow for posts?

Mr. Sahler: I have had them in the ground now for five years.

The President: Were they cured before setting?

Mr. Sahler: No; I put them in green, and they dried afterwards.

Growing New Fruits.

QUESTION HOUR, LED BY

SAM'L B. GREEN, PROFESSOR OF HORTICULTURE, ST. ANTHONY PARK.

Prof. Green: The session is along the line of plant-breeding; it is full of good subjects, and while there are other lines we could take up perhaps, this whole session this morning is in charge of the Plant-Breeders' Auxiliary, and the purpose is to arouse an interest in and encourage plant-breeding.

Now, the first line, and the one that we are probably more interested in than any other, is the productive line; that is the thing we are after, the results, what we can get out of it; that is the question that interests us most. We may acquire a great deal of knowledge in regard to plant-breeding that is interesting, and we have acquired a great many interesting data in regard to plant-breeding, yet we have not got to the point where we can classify that knowledge and lay down general principles as to how this thing is governed—there is no question but what there is cause and effect in the laws of plant-breeding as well as anywhere else, but we have simply not been able up to this time to definitely work out these facts.

Mr. Wyman Elliot: It is really in the experimental stage.

Prof. Green: We are under great obligations to these men who have for years experimented along these lines and got these results together. Twenty-five years ago the term "plant-breeding" had hardly been conceived in the minds of men. The thought had been conceived but in a very abstract way. I remember Levi Stockbridge, who from 1875 to 1879 was my teacher, used to say that by hybridization and selection we could do anything with a plant, but he was among the very few men who held any such views at that time, and he did not seem able to convince anybody but himself that such a thing was possible. Such a thing as we are discussing here this morning was at that time unknown. The only effort made at that time in the line of plant-breeding was in the feature of producing new flowers..

I had a foreman, a Frenchman, at one time—I cite this merely as an instance—and he had a little pink that had been in his family for several generations—it had come down from father to son—and they had tried to double that flower and make it come true from seed. It was something that had been in the family for years and years, and they had carried it from one generation to another. That is the way

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some of our best flowers have come. It is the changes that come in the flower by constant selection, and these changes have made the plant more ornamental and useful.

Mr. Geo. J. Kellogg (Wis.): Did he succeed with the pink?

Prof. Green: I don't know, I suppose he is still experimenting.

Mr. Kellogg: If we knew that he succeeded that would be a little encouragement.

Prof. Green: Well, we can see the seedsmen are offering wonderful forms of that pink.

Mr. Elliot: That was a long road. With the knowledge we have today he would be able to reach results much quicker.

Prof. Green: I think probably by crossing we could break up the tendency to come true and get another form, but as soon as you get a cross you make it more difficult to fix it from seed.

Mr. Clarence Wedge: What do you consider the most promising and useful cross to make at this time in experimenting in the lines of fruit for the amateur?

Prof. Green: I think in the way of plums it is very important to get crosses between the Japanese and the American kinds. That is not a practical thing for poor locations, but at the same time there are many good locations where Japanese plums can be grown or can be grown with a little protection, and I think there is a very fruitful field in the crossing of the Japanese and the American plums. We are fixed at the Experiment Station to do that kind of work, and we are going to do something of that kind later on. We have a lot of tender stock at the Experiment Station, and we imported recently—I can't say just how much—but I know the whole bill is over $100.00, for plums that we got from England, plums and cherries. The object of that is to introduce something new and to break up the tendency in our native plums to deteriorate, and to get something bigger and better, and something more valuable in the way of plums on our native soil. We have got to get that in the greenhouse. We have got the same kind of climate in the greenhouse that Burbank gets at Santa Rosa, Cal.

Mr. Seth Kenney: Do you think the roots of a tender kind of fruit could be protected by putting sawdust over the roots to keep the roots from freezing so hard, so that during the warmest days in winter the sap might go up into the limbs and these tender varieties might be carried through the winter?

Prof. Green: That opens up an interesting field. It seems to me there might be something in that. We know the Baldwin apple is tender, and the Duchess is hardy, and I think it is due to the fact that the Duchess will transmit so much water through the roots. I think that is worth trying, to put a heavy mulch around the roots to protect the roots from too deep freezing, to allow an increase of hardiness: I think there might be something in that.

Mr. Wedge: I think that is an extremely interesting question, and in order to throw some light on that point I would like to ask Mr. Elliot whether it is not true that we had a winter twenty-five years ago when the ground in many orchards was not frozen at all.

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Prof. Green: I heard it stated that that was the condition at that time.

Mr. Wedge: Of course, it might have been due to a fall condition.

Prof. Green: It might have been an open, late autumn.

Mr. Elliot: I think that was the season when everything went into the winter in an unripened state, nothing matured; that was in 1885-86.

Mr. Kenney: There were six days when the thermometer went to forty degrees below zero. I know on the first of January I started for New Orleans, and there had been six days of that kind of weather.

Prof. Green: I should feel more sure about the hardiness of trees if it did not freeze more than a foot. I know there is some evaporation from trees in the winter. I presume all of you have seen twigs from trees in the spring of the year that were dried by freezing, that were brittle, something like clothes on a clothes-line.

Mr. Elliot: I know that to be true; after a cold spell you will see the limbs brittle, but after a few days of warm weather they will freshen up.

Prof. Green: Where the roots are thawed out would that contribute moisture: that is the question.

Mr. Elliot: Should we not keep our plants dormant?

Mr. C. S. Harrison (Neb.): I watched a Concord grape kill back an inch every day.

Mr. S. D. Richardson: When the sugar maple sap flows I have seen the ground frozen solid. I have seen the water dropping from twigs onto the sidewalk when the ground was frozen deep.

Prof. Green: I have seen sap flowing from logs along the skidway; we put a log on the skidway and the sap would run out.

Mr. Probstfield: I think every one will admit the fact that one of the most important points, if not the most important point, in this plant-breeding experiment, is to keep accurate data by those that experiment with this cross-fertilization of plants, that is, what qualities are imparted by either one or the other of the crosses. I do not know whether we can predict accurate results, or whether we can tell which of the two parents contributes the quality; I don't know whether it is at random or not.

Prof. Green: It is at random. The plants that we fruit growers deal with are all grown by bud deviations. We do not propagate by a special process, but we propagate them by bud deviations. The seedsman must have his plants come true. We have not grown our fruit long enough in one line to have it come true. Plants from seed that come true have been long grown under fixed conditions. A plant which has not had its type fixed has a tendency to go back from the seed and go back to the wild line. We must not look at our fruit plants as plants where we can fruit them to the point where they will come true like peas and beans; that would take a long time; I think it must be largely experimental.

Mr. Probstfield: How about potatoes

Prof. Green: Potatoes are the same way.

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Mr. Probstfield: I have picked out several potatoes that I know were of a pure variety, that matured two different kind of potatoes in the hill, although I knew that all the potatoes in the hill were from the same original piece that was planted; but it produced two different kinds of potatoes.

Prof. Green: Yes, that is bud variation. We look upon a tree as a single individual, but a tree is a community of individuals. A tree is not a single individual, it is a community of individuals, and each bud is an individual, and capable of being and doing the things an individual may do.

Mr. Probstfelt: All life is the same.

Prof. Green: No, you take a dog, and you can't grow another dog from a piece of his tail, but you take a Duchess tree, and you can grow another tree from the bud.

Mr. Probstfield: Yes, but we are something of the same composition; a variation takes place between the living animals the same as in plants.

Prof. Green: I can see that is the principle of it, but the position I have stated is that the tree is a community of individuals, it is a village made up of different individuals, and they are all competing and struggling for a living, for water, light, air and food; light and air are food, and they are struggling for an existence, and of course the strongest will survive. Now you ask whether a bud can produce something different from itself. Yes, oh, yes, lots of them. I was just illustrating one. For all practical purposes you know a Duchess bud will produce a Duchess, but when you come to the theoretical side of it, that bud may do something very peculiar. For instance, take the Bride rose, the old Mermet; it was a pink rose with pitcher-shaped petals. When I used to be in the greenhouse I used to grow the Mermet and think it was fine, but a few years after that they had a white one. That rose was a pink, and then they got a little bit darker pink, and then they produced a white rose with the same beautifully shaped petals, and they called it the Bride, and you have it today. Now, how did that occur? These things occur all around us.

In some greenhouses the Mermet produces a pure white rose. That is a case of individualism of that rose. But that will often go back again, but if you keep at it it will fix itself permanently, and you will have the Bride rose that is grown in the greenhouse. At Senator Washburn's place, at Fair Oaks, they found a coleus with a bright red leaf and a little gold band around the edge. The gardener saw there was one bunch of this coleus that came that way, and on propagating it he found it came true, so we have now that coleus called Fair Oaks. It is a bud variation. There are lots of these instances, and it may occur in the apple.

Mr. Probstfield: I can give an example of the apple. I had a Transcendant tree that had a leaf that was quite scalloped.

Prof. Green: We do not see these things because we do not look for them. These things are occurring all around us, but we do not observe them. It might take some years to fix the type, but it can be fixed by cultivation.

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Mr. Geo. J. Kellogg: What would be the effect of the Tallman Sweet crossed with these seedlings, Would these seedlings produce sweet apples?

Prof. Green: It is a mongrel. Those cases do not come true.

Mr. Kellogg: You don't think the bees are to blame for that crossing.

Prof. Green: Oh, no; that is an organic peculiarity.

Mr. C. G. Patten (Iowa): The difficulty in fixing a type is that there are no two things in nature that are alike.

Prof. Green: The strongest tendency in all plants and animals is to be different, to vary one from the other.

Mr. Patten: Is there not a tendency to albinism?

Prof. Green: That is often a sign of degeneracy.

Mr. Patten: I was corresponding with Prof. Ray, and he called it albinism.

Prof. Green: I don't know what albinism is. It is a change of one form to another, it has that peculiarity, but that does not explain very much. That in itself is not very much.

Mr. J. V. Bailey: Has one generation anything to do with fixing the type of an apple.

Prof. Green: Oh, yes, but it takes several lifetimes.

Mr. Patten: There are some characteristics we can fix in much shorter time in the apple. In a case of my own, beginning with the Brier Sweet and the Pound Sweet, the sweet character of those seedlings was fixed. They are all sweet. I have seen these varieties together. and I have no doubt but that the apples would be practically all sweet.

Prof. Green: Mr. Patten, after years of work in this field and with lots of experience, feels that the sweet characteristic in the apples is a rational characteristic.

Mr. Kenney: I want to ask another question about the apples. I have some Duchess on the Malinda, and I have the Malinda stay until spring, while the Duchess fall in the autumn. When their seedlings come to bear may we expect the same tendency of the fruit to hang on the trees as on the Malinda? It was pollenized with the Duchess.

Prof. Green: I don't know anything about it; you need not expect anything.

Mr. Patten: I would say no, sir, emphatically.

Prof. Green: You mean the Duchess would overcome that?

Mr. Patten: It would overcome it to the extent of its fruiting, which is very strong in the Duchess.

Prof. Green: The Duchess seems to have carried along with it its power of fixing its type.

Mr. Kenney: It bears continuously; better than anything I know of.

Prof. Green: It has the power to transmit its characteristics to the young, prepotency; we find that in animals, and in the breeding of animals we always try to discover the animal that will transmit its type.

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Mr. Patten: I wish to add just a word to what I said by saying that the tendency to hold the leaves seem to be a strong characteristic. That characteristic is quite markedly transmitted.

Prof. Green: You mean to hold its leaves in the autumn?

Mr. Patten: Yes, hold them late.

Prof. Green: We are getting from Mr. Patten what I have been talking about. These experiments will be continued, and that is the way we are going to get a law in this plant-breeding.

The Public Square in the Prairie Village.

FRED NUSSBAUMER, SUPT. OF PARKS, ST. PAUL.

With the advance of civilization the appreciation of natural beauty by the public has become more profound and more sympathetic. This is true not only in the case of large cities where large tracts of land are being devoted to parks and recreation grounds, but an eager and equally developed desire for beauty has sprung up and taken hold of the people of the smaller country communities of our state. This desire should be encouraged with every possible means at our command. By this I do not mean the sending out of unscrupulous tree agents with highly colored and painted plates—and with still higher catalogue prices for trees and shrubbery which are often too tender for our climate. I would recommend to the Minnesota people to buy Minnesota nursery grown trees and shrubs, thereby settling the responsibility for failures on a home concern, which, if it wants to cater the home trade, should certainly be expected to know what to send north, or what to send to the southern part of the state, for successful planting. Monotony in planting need not be feared by using strictly Minnesota trees and shrubs. The forest scenery in our state presents a variety of foliage and flowers second to none in the country, and our nurseries should supply the demand for the native product at reasonable prices.

Every community, village and hamlet, should see to it that it possesses a public forest grove to the extent of at least one to forty acres or more. In our prairie regions this wood lot should be planted in the usual way of close line planting of such varieties of trees as will give quick results, but after a height of ten or fifteen feet is attained the planting should be thinned out and be rearranged with an idea of introducing the more substantial varieties of trees and shrubs, which in this sheltered situation will grow satisfactorily and with the introduction of walks and drives will transform such a wood lot into a beautiful park suitable for all kinds of recreation purposes. It is not

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at all necessary to introduce anything which would cause great expense for the maintenance of such a park. The main idea should be to have a forest grove available for public use and make it accessible for all the purposes intended.

If this idea should be followed by all communities in the prairie region of our state, it would be hard to estimate the pecuniary advantage thereby gained. Let us consider the fact that should thousands of well-to-do people from the large cities of this country, instead of going to the mountain and forest regions or to the shores of the ocean, prefer to spend the summer months in attractive and quiet country villages or farm homes in the pure air of Minnesota, this would advertise our state advantageously and would naturally induce more people to come within our borders. But aside from this certain pecuniary return in dollars and cents, there is a more important reason for improving our communities and beautifying our surroundings: it is the creating of a sense of contentment and happiness, a feeling of attachment to the home and a powerful stimulant for better citizenship.

It is a mistaken supposition that country towns are not in need of parks and playgrounds, and especially those in the prairie regions. While it is true that the people in the country do not need the sight of green and meadows and open scenery of broad extent, as has to be provided for in large city parks, it is nevertheless true that the establishing of woodland groves and shady recreation grounds will help to heighten the monotony of farm life with its unending round of daily toil—and no greater delightful change from the hard and narrow lines of farm life can be imagined than that afforded by an alluring pleasure ground to which the surrounding people are drawn for a holiday now and then to enjoy a few hours undarkened by care, with music and games in neighborly companionship. Besides this priceless recuperative value for the rural population, the planting of these forest groves will add immensely to the beauty of scenery profitable in attractiveness to the whole state.

Speaking of the usefulness of city parks, there is no spot in any of them more appreciated than the playground. Why should the children in the country be grievously defrauded of their right to play the games of their age in company with their companions? This could only be satisfactorily answered by acknowledging a short-sighted policy on the part of those responsible for the neglect of providing those grounds.

The drudge of routine labor on the farm by the country boy and girl is just as monotonous to him as is the work of the city boy and

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girl in a department store. The elements of humanity figure equally in both cases. Each will find equal pleasure in playing, and each will be equally benefited in body and soul. The educational feature of the playground is emphasized by the fact that the commingling of classes and sexes enhances the American spirit of fair play among the youngsters to the benefit of the coming generation and to the welfare of the country.

There is one more important matter closely related to public squares and playgrounds for the prairie village, and that is the improvement of roads. A good road will invariably put the stamp of thrift and prosperity on a community. If the village has a railroad station, that and the main road leading from it and into the village should receive the first attention for improvement. A line of shade trees on each side of a good roadway will always make a good impression on visitors. The railway depot grounds should be kept clean and tidy, and whenever possible a grass plot with a few trees and shrubbery should be introduced. Rairoad companies can be persuaded to pay a fair share toward the improvement of their station grounds but they cannot be expected to do anything if the community does not by precept and example show its energy and determination to carry out the work successfully. The problem is not a difficult one, nor is it expensive. "Where there is a will, there is a way." The improvement of our cities, villages, hamlets, our rivers and roads, farms and forests, in every nook and corner of our state, means stability and permanent prosperity, and, what is more, it means a high condition of civilization.

Judge L. R. Moyer: I was glad to hear this paper on planting in public squares. You know in most of those parks or squares in country towns and villages they plant their trees orchard fashion, in straight lines. I particularly think of our court-house grounds. There was a court-house built in the early days, and it stands there yet, and up in front of it there is a walk eight feet wide and two rows of box elders eight feet apart. Those trees have been growing twenty-five years or more and are crowding each other, and the county commissioners will not allow them to be cut down, but instead they have been trimming them and have made a row of telephone poles of them. Ten years ago there were planted around the court-house some shrubs. There were some objectionable views completely shut off by some oleagnus. The janitor took a notion he would improve the grounds, so he trimmed them up ten feet high, and you can now see the outbuildings and everything around them. It is against such things that we have to work. I think a certain amount of shrubbery ought to be used for those squares. There is a square in Canby, and a member of this society, Mr. Sievert, was instrumental in planting

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it, and it is very beautiful. I remember there is one at Benson planted full of box elders, and it is not at all interesting. The box elder is a low growing tree and begins to drop its leaves as soon as spring opens and is almost always infested with bugs. I think we ought to encourage more of the proper kind of planting in our country towns and villages.

Mrs. Anna B. Underwood: I can advise Judge Moyer of one way to get out of the difficulty, and that is to have a park board in every town and village that shall take charge of those trees and see that they are properly trimmed.

Mr. Wedge: I would like to ask one question, and that is whether the snowball, the Viburnum Pekinensis, the snowball of eastern Asia, is found to be hardy in St. Paul.

Mr. Nussbaumer: No, that is only half hardy.

Mr. Wedge: I was very much surprised to see some handsome specimens growing on the cemetery grounds at Northfield. I have tried it on my own place, and it is scarcely half hardy.

Mr. Nussbaumer: Ours are large and fine looking, but they need protection.

The Distribution of Nursery Stock.

COL. C. W. GURNEY, NURSERYMAN, YANKTON, S. DAK.

There are two distinct view points from which I wish to treat this subject: (1) the horticultural, and (2) the commercial.

The former is quite easily disposed of. The matter will to a great extent adjust itself between the nurseryman and the planter; but, in my judgment, a planter should always be able to trace back his planting to some reliable nursery. There are four principal methods in common use by which this distribution is made: (1) Direct purchase from the nursery in person; (2) direct purchase through a catalog or correspondence; (3) purchase from a nursery through its bona fide agent; and (4) through a dealer.

There can be no question as to the advisability of the two former methods, and the only just criticism that can be made against the third, or agency system, is that prices will naturally be higher and that under the influence of a skillful solicitor a man is sometimes loaded up more heavily than would have been the case had he been governed by his own deliberate judgment in selection and purchase. But neither of these can be hardly classed as objections from a horticultural standpoint, and they are not necessarily a fault of the system but more an abuse of the system. In either of the three first methods the planter has a sure recourse back upon the nursery, which is of the greatest importance.

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I believe the dealer system is wrong and pernicious. Neither need this be necessarily so, but, like the others, it is the abuse of a system rather than the system itself. Doubtless there are cases where the dealer is as honest and fair as the real agent, but I have yet to discover one of those cases. So I reason from the effect that there must be a very inviting cause which marshals all the fakirs under that banner.

Col. C. W. Gurney.

The fraud begins at the very inception, when the so-called "agent" introduces himself to a prospective purchaser, or "victim", as the "agent" of some nursery which he names and which is generally the one with which his principal, the "boss," has made a contract for stock at an agreed price; but it is frequently some nursery nearer and which is popular in that vicinity. Hardly a week passes that I do not have letters from a distance asking me to countermand the order which he gave to my agent. I invariably answer them that I have no agents,

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and that ends it. If a purchaser through a dealer writes to the nursery from which the stock is presumably to be furnished, there will be no answer to it as the wholesaler is in no sense the principal nor the dealer the agent.

Without any regard to the real value of the goods the dealer sells them as high as he can, and the adaptability of trees to different climates never worries him in the least. He is only anxious that trees shall be smooth and deliver well and bring in cash returns. I am reliably informed that common apples have been generally sold during the past summer through these dealers at $1.00 each.

I am going to cite just two cases to show (1) that this art of swindling is not new and (2) to give an aggravated case. In 1858, soon after I had exchanged my home in Massachusetts for one in Iowa, and seeing no apple trees large or small, I heard of a man at Hesper, in Winneshiek County, near the Minnesota line, who was growing Northern Spy apples. I walked more than forty miles to see this orchard. I found it thrifty and productive, but the tree bore Duchess of Oldenburg apples. In this case doubtless the fakir did the planter a favor in making the substitution, but it doesn't always work that way.

About twenty years ago, in Knox county, Nebraska, south of Creighton, I found a Mr. Brown, a one-armed soldier who had invested his poor pension in a five-acre orchard of Duchess apples. In that early day and in that country this should have been a No. 1 investment, but the trees were all scrubby, common seedlings, and the only good thing about them was that they were nearly all dead or dying. This was just as much a crime and just as easily amenable to punishment through the statutes as if the fakir had stolen his horses. But such crimes, while of the utmost frequency, are seldom or never punished.

Many of the states, especially Minnesota and South Dakota, have attempted to stop or mitigate this swindling by the passage of drastic laws, but they have been abortive in every case and, in my judgment, the only remedy is education, and the best medium is the horticultural society.

From the commercial viewpoint I can say of the transportation companies as Lord Palmerston did of Ireland. "Ireland is my difficulty." The transportation companies are mine. Last spring in a shipment of a little more than 2,200 bills, only about 800 being by freight and the balance by express, I have eight claims for entire "loss in transit" by freight, aggregating several hundred dollars, and

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but nine by express. Claims were all filed promptly, but none have been paid up to date, though one railroad did in two cases offer to pay the losses at the rate of $5.00 for each cwt., which I refused, as the invoice value is about six times as much as the offer. In making this offer they wrote me that this was the extent of their liability "under recent rulings of the Interstate Commerce Commission." This statement was untrue, and the claim agent knew it, and it was simply a bluff. None have better lawyers or understand these transportation matters better than they do. The nurseryman's release to $5.00 valuation per cwt. is only valid against loss or damage caused by "the acts of God or the public enemy," that is, circumstances not under their

Residence of Col. Gurney, Yankton, S. D.

control, and is not valid in any case against loss by the carelessness, negligence or wilful wrong of the carrier.

While I had but eight losses by freight, more than seventy-five per cent of the balance did not reach destination "in a reasonable time" and caused much annoyance and more or less loss but too small in any one case to justify the filing a claim for such loss. The old rule for the moving of freight in less than car lots is, "One day for each hundred miles, and one day for each transfer," but in a majority of all the cases they made less than fifty miles per day and in many cases less than twenty-five miles per day. For instance, I had a sack of seed thirty days in coming from Parkston to Yankton, about fifty miles.

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One of our roads here makes more trouble than the other two together. I believe the reason is that this road insists in using the same colored waybill for all kinds of freight, while the other two roads use a pink waybill for all perishable freight, and this color has the right of way.

There is no reason or excuse for these long delays. They are caused generally by negligence or "gross carelessness," and there is a remedy. We must make and crowd all such claims for damage, however small, even if unprofitable to the shipper. When we succeed in making negligence unprofitable to the carriers, we shall have as good service as we pay for. This is an argument which all corporations can understand.

It suggests itself to me that the way to get at this right is to organize a sort of clearing house for claims. Call the organization, say the "Shippers' Protective Association." Have a small annual fee for membership, and employ a bright, ambitious young lawyer, who would master the whole transportation question like a b c, and let all members send their claims there with all the details. He could tell almost at a glance whether or not the claim is valid and honest. If not he should return it with explanation, but if good he should collect, by suit if necessary. But such action would not long be necessary. They would soon learn that this man brings no claims before them that he cannot collect in the courts, and they would give them early attention.

Instead of the "rulings" of the Interstate Commerce Commission having ruled sustaining the validity of the release to $5.00 per cwt., they have not only made no such rulings or any other, but their interpretations of the law and their recommendations have been exactly the opposite.

This refusal, and the new uniform bill of lading, has led me to familiarize myself with the matter, and I think this will be of interest to all shippers and should be hardly less so to the consignees, as our interests are much the same. Send to Chairman C. C. McCain, of the uniform bill of lading committee, 143 Liberty St., New York, for their literature; also send to the Interstate Commerce Commission, at Washington, D. C., for their reports, especially number 933.

The uniform bill of lading, while it makes a little more work in the office, is a great stride in the right direction. All the fine print conditions on its back are so reviewed and corrected that they become a contract between the shipper and carrier that all can understand, and will be sustained in the courts. However you may be deceived by the second clause of section three. This, under the interpretation of the

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Interstate Commerce Commission, don't mean just what it seems to. It has no reference to the ordinary release which we use on the face of the bill of lading but relates wholly to cases where a rate is based upon a valuation and the valuation is given in good faith by the shipper "in writing," and not to cases where the lower rate is based upon an arbitrary release to a certain arbitrary valuation. In this clause we find that the carrier is liable for all loss or damage, from whatever cause, to the full invoice value of the goods "unless a lower rate has been represented in writing by the shipper or has been agreed upon or is determined by the classification or tariff upon which the rate is based, in any of which events such lower value shall be the maximum amount to govern such computation, whether or not such loss or damage occurs from negligence."

Read the report of the Interstate Commerce Commission along these lines. I will select but a few. Page 550, Section 5, "A carrier must not make use of its released rates as a means of escaping liability for the consequences of its negligence, either wholly or in part." In short, there is but one interpretation by the commission and by the courts, and that is that the carriers are liable in every case for loss or damage occurring through their negligence under the common law, and there can be no court decisions to alter, suspend or abrogate the action of the common law. The common law is not necessarily a statute nor is it the result of any human agency, any more than is the law of gravity or mathematics. The courts may only interpret these laws. They cannot change them.

One common law maxim is "A person may waive the application of a law made for his special benefit, but he cannot waive its action when the law was made for the public good." Where losses occur from causes beyond the control of the carrier, such as are called "the acts of God or of the public enemy," the release to a certain arbitrary valuation is valid, but no such release is good against the negligence of a carrier or his wilful wrong.

The Hepburn law, of which the Interstate Commission gives the interpretation, did not undertake to vary or suspend in any manner the action of the common law, but did undertake to interpret it as applicable to common carriers in cases where there was a misunderstanding between shipper and carrier as to what the common law really is.

The shippers should determine soon whether or not they will use the ordinary release in making a bill of lading. In case we elect to refuse it, the classification is raised from third to second, which will

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amount approximately to .10 cents per cwt. per 100 miles. Thus in shipping 500 pounds 200 miles the freight charges would be about $1 more than by the third class.

The transportation companies understand all this at least as well as any one else, and I have interpreted this second clause of the third section on the back of the new bill of lading to mean practically that if I release and have a loss I can recover the $5 per cwt. without much difficulty, but if I stand upon my rights in case of loss by negligence and insist upon the full invoice value of the shipment, I can recover it just as surely, but that the carriers will place all possible obstacles in my way to wear me out. If I do not release, the full invoice value will be paid without suit and with their usual promptness, say from one to two years. But we are not kicking much about that; we are willing to give them a good reasonable time.

There is one more point regarding the liability of common carriers that is not well understood. That is the manner in which a carrier releases itself from its obligations as such and merges them into the lesser liabilities of a warehouseman. Under the common law a carrier must notify the consignee at the destination point and not till that is done is the liability so changed. For instance, if a carrier transports a consignment of goods through in a reasonable time and gives notice and the consignee does not remove them, and they are damaged as, if trees or perishable goods by age or drying, the carrier is not responsible. But if no notice is given, and goods are held till spoiled, the carrier is liable as such for all damage caused by failure to give such notice. This principle is true of all classes of goods. I have said that we should have no relief from the negligence of the carriers till we make it unprofitable for them to be negligent.

I hope that none of you will conclude from this paper that I am one of those illogical railroad and corporation haters. They may have had stronger friends than I but never better. I appreciate them at their full value, and I am not asking any hardships of them. It is as easy to transport goods in a "reasonable time" as it is to compete against the ox team transportation. I think these delays come generally from a car being set out for some purpose, and the agent or other factor of the road is too indolent or, perhaps, too much overworked, to think to set it in again, and it stays there for weeks and even months "unloved, unhonored and unsung," till it becomes heavy with tracers, when some one wakes up and starts it off again.

I would like to join an organization that would be my clearing house for these claims, and so allow me to devote my time to something else, even if not more than a dozen in the organization. We do

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not want these damage claims, even if they are paid promptly. We want our shipments to go through to our customers in a reasonable time, and we want to obey their orders when they direct shipments by freight or express. We are not in business as claim agents and have no time to devote to that business.

I have adopted a rule which pleases my cusomers. When a shipment is so long overdue as to make it probable goods are spoiled, I write the consignee offering to duplicate the shipment and hold the carrier for my pay, releasing the consignee from the trouble of making the collection. This is always accepted, and I ship at once or, if too late, it goes over till the next season. This is the present status of all the unpaid claims. In order to transfer the claim back to me from the consignee he makes a formal assignment, generally on the back of the bill of lading. This concentrates the claims into fewer hands, much to the benefit of the carriers, and it would be still more advantageous if they could all be transferred into the hands of one man. The carriers would soon learn that when a claim came to them through him with the organization back of him, that they must get a move on and take care of it. All safeguards should be used to prevent a spurious or unfounded claim going up through this agency and, possibly, a fine imposed upon any member who should misstate a case.

It is not my principal object in presenting this paper to give instructions to shippers, nor to advise them how to collect claims. These are only corollary to the real object, which is to improve the transportation service, and I believe it can only be done through organization.

The President: This was a very instructive paper, very comprehensive, and there is a short time which can be devoted to its discussion.

Mr. G. D. Black (Iowa): When I make a shipment of any size I enclose the shipping receipt, and I write to the receiver that if the shipment does not arrive within a certain time—I usually state the time I think it ought to go through without much delay—to notify me immediately, so that I may trace it, and I go after them.

Col. Gurney: I do practically the same thing, but not one in fifty notify me until two or three weeks afterward, until the season is closed. They are negligent.

Mr. Geo. J. Kellogg (Wis.): I have found it advisable to send a tracer the next day or the second day; that plan has worked well.

Mr. Cole: I wish to congratulate the speaker on his able paper. but I am sorry that he did not emphasize the first part of his address more than he did. I think the reason why the average farmer has no

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orchard is to a large degree the fault of the nursery agent. I have been for ten years a nursery agent, and you may wonder why I say so. I know it is a fact better than any one else. I have come in contact with unreliable nursery agents who have been continuously misrepresenting the goods they sold to the farmers until they feel like kicking every one off the place. There is no reason why a nursery agent cannot do an honorable business and promote the business of the nurseryman by whom he is employed and also promote the interests of the individual or community to whom he sells his commodity. There is no other way in which he can do both so much good. This horticultural society should take this matter up and see to it that only responsible men sell goods and should then see to it also that nurserymen sell only responsible goods. I find men who have bought trees which they supposed were of a standard variety but which proved absolutely worthless. I recently heard of a man who paid an agent two dollars apiece for apple trees that were of absolutely no value, and such men feel like kicking every agent off the place because they have been humbugged. (Applause.)

Orchard Notes from a Half Century Standpoint.

S. D. RICHARDSON, NURSERYMAN, WINNEBAGO.

Sixty-five years ago when my father moved from Vermont to Dundee, Ill., I first heard the words so familiar to all the early settlers in Minnesota: "Oh, yes, this is a fine country, and you can raise plenty of small fruit, but it is not any use to try to raise apples; it is too far west." Before I moved to Minnesota, in June, 1856, it had been proved that plenty of apples could be raised by planting and caring for the trees, and I came to the conclusion that where wheat could be grown apples of some kind could also be grown.

In the spring of 1858 I bought my first apple trees, and they were a failure. In the fall of 1863 I bought a small orchard of two parties. One man represented a Wisconsin nursery and sold several varieties that were hardy in Minnesota, and Mr. Jordan, of Rochester, Minn., who knew of only one variety that could be grown successfully with us, and that was the Fameuse, or Snow. This last orchard looked well when I moved to Martin county, in June, 1866, where I lived sixteen years.

In the spring of 1867 I sent to J. Knox, of Pittsburg, Pa., for a $10.00 order of small fruits, to be sent by mail. Our nearest postoffice was twelve miles distant, and nurseries and tree agents were

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unknown in Martin county then. A few years later I planted some apple seed, but they never amounted to anything; the trees were not hardy.

Several years later I set out an orchard of over fifty trees, and the grasshoppers destroyed them all but one. Several years later I set an orchard of 200 trees, and the mice, rabbits and sheep took a large percentage of them, but part of them are growing on the old homestead yet. Other men had better success than I did, and I saw some fine orchards growing when I left Martin county.

I never lost faith in apple growing in Minnesota, and in 1883 when we concluded to engage in the nursery business, I selected Minnesota in preference to any other state in the Union. I thought that a nursery was needed in the Blue Earth valley, and the result has justified my faith.

I have learned from my own experience, and the experience of others, and was years making up my mind about many things connected with apple growing and have much yet to learn. I believe whatever the character of the surface soil may be that a well drained clay subsoil is necessary. I think that tile drainage would be of great benefit in most localities, as apple trees do not like wet feet, and on our own place the most of the trees that have root-killed have killed from the bottom up; when all the lower roots were dead, sometimes there was enough of the top roots left alive so that the trees recovered and bid fair to live many years. I should not hesitate to set a few dozen trees on any soil where good crops may be grown, but would not set a large orchard where I could not have a well drained clay sub-soil, either natural or artificial.

I would set trees twelve to sixteen inches deeper than they stood in the nursery, trim the bruised roots with a sharp knife, dig large holes and pack the earth very firmly, using water only when the ground is very dry, applying the water after the tree is set and the hole half filled up, and using lots of it. Ground that is in a good state of cultivation is easier to plant and care for, but trees can be set on a side-hill or in places in sod and do well and be made to make a big growth every year by mulching annually with either straw or well rotted manure.

The most of the orchards in Faribault county are in sod. Cultivated orchards are more subject to blight, wash badly where the ground is rolling, and it is lots more work to care for an orchard that way than it is to seed down to clover or grass and mulch, and the sod and mulch seems to give the best results as far as my observation goes.

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Cherries and plums might pay well in some localities but not at Winnebago, but it has a tendency to make a person good natured to have an abundance for home use when the year is favorable. The birds will take the early cherries, but a good grove of Russian mulberries will feed the birds and save the late cherries.

It is commonly said that orchards are short lived in Minnesota, but I do not know any reason why it should be so. Given good, well drained land, good care, room so they can make large, low-topped trees, and I do not know of any reason why an orchard should not last a hundred years. Some one will know more about this question a hundred years from now than we do.

An apple tree should be pruned when small and interlocking limbs cut out, and a good shaped open top formed while it can be done with a good sharp pocket knife; then the tops and roots will balance each other, and pruning can be safely omitted. Many advocate June pruning, but I once saw a tree killed by June pruning, and a pair of pruning shears was the implement used. A large proportion of the top of a young tree can be removed in the spring before growth commences apparently without injury, while if done in June it would kill the tree.

In looking over the report of our society for 1881, I saw where Mr. Gould said that he did not think that we should ever raise apples on the prairies west of the "Big Woods." How it would have gladdened his heart if he could have known that twenty-five years later a great many carloads of apples would have been shipped away from these same prairies.

There always have to be pioneers to go ahead and "blaze the trail," so that those who follow after can have an easier time, and those who follow ought to be able to do better work than those who went ahead.

The future of horticulture looks bright, but if we should have cold years and trees die, why, plant more! It is a safe way for the farmer to plant a few trees every year, so as to be sure of a supply for home use. A farmer does not get discouraged and give up farming because he may have a failure sometimes, but he is persistent and keeps trying till he finally succeeds, and the horticulturist should do the same way.

Surely horticulture has made substantial progress in the last fifty years in Minnesota.

Mr. Hamlin Poore: Mr. Richardson's experience is similar to mine. I didn't come from Vermont, but I can prove it. I came to

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the state in 1863, and I liked everything except I couldn't raise apples. I left this state in 1864 and located in Missouri. I didn't like the climate and thought I would like to come back to Minnesota if I could only raise apple trees. My sister from Minnesota visited me and brought some apples that were raised in Minnesota. I came back in 1867 and located on the prairie. They told me it was useless to try to raise apples. After I was here about fifteen years I got in touch with our old friend Harris, and told him that the only regret I had in being in this state was the fact I could not raise apple trees. He wrote back and said if he had time he would send me some trees. I had very little faith that I should be successful. However, I told him to send me one of each variety. He sent me twenty-five different varieties. Every one of those trees is growing satisfactorily, and every time I see those trees I think of my friend Harris, and every time I see them I feel sorry that I did not try to raise them fifteen years earlier than I did. Our farmers said they could grow nothing but cottonwood in our part of the state. We have apple trees growing twenty years old in our county, and we will yet ship apples out of our county. I don't think anybody should be discouraged in this state because they cannot grow apples.

Mr. C. L. Richardson (Wis.): We have demonstrated in northern Wisconsin that we can grow apple trees and grow apples on the trees. We are not doing that everywhere, but it is a certain fixed type of soil in which we are doing it at present. It is a clay soil from seven to ten feet deep, and in spots it goes as deep as twenty-five feet. The country was originally timbered with hardwood, rolling, high hills and deep valleys, showing a difference in elevation of a hundred feet. We are growing apple trees on every slope and every kind of exposure with approximately equal success. That soil is interspersed with stones, remnants of the glacial drift, but it is a fine water retaining soil, with ideal conditions for both air and water drainage—and I think it is almost a question of water supply when we come to the last analysis. That cool, retentive soil which does not thaw out early in the spring is the ideal soil for apple trees, and it is so retentive of moisture that in the most severe years it does not dry out. (Applause.)

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SECRETARY'S CORNER

WILL YOU EXHIBIT FRUIT AT THE STATE FAIR?—The prospects of a fair apple crop should insure a good exhibit at the coming fair. Send to the secretary for a premium list if you have not received one and turn to page 94. Make all possible entries and exhibit everything you can. That is the way to make it pay. For information as to this department address Secretary Latham.

ABOUT THE NEWELL APPLE.—Mr. A. D. Brown, of Baraboo, Wis., an orchardist of much experience, champions the Newell apple, and in a recent communication says, "I think there are very few varieties that are so good. Picked when ripe and packed in a tight package it will keep until the first of May. I have grown the tree for twenty years and not one of one hundred has broken down in the crotch or blighted. It makes a big wood growth, and if not properly pruned will not color its frnit well. The tree has never injured in any winter for over forty years. I think, with the late Prof. Goff, it is one of our most promising varieties from an orchardist's standpoint, and I believe it will be valuable in your state."

DEATH OF J. C. CRAMER.—Another of the pioneers of this society, John C. Cramer, long a resident of LaCrescent, passed on June 6th, at a ripe old age. Mr. Cramer was for a long period a member of this society, and served the society well till his sight failed some years since. He has not been in attendance at our gatherings since the time when the picture of the "Veterans of Minnesota Horticulture" was taken, in December, 1897, twelve years ago. He was one of the group of ten whose portraits appear in that picture. Of these ten only three now survive, Mr. Ditus Day, Mr. Seth H. Kenny and Mr. Wyman Elliot. Such are the ravages of time with the old and tried members of the Horticultural Society. Further facts in regard to the life of Mr. Cramer will find place in an early number of our monthly.

ANNUAL SHOW OF THE STATE ROSE SOCIETY.—Notice of this should have appeared in the July issue but was crowded out at the last. The sixth annual exhibit of that society was held in one of the rooms of the St. Paul Auditorium. While the shape of the hall permitted a very good general view of the exhibit, the space was not by any means what it should have been for so large a show. The season being late few roses were exhibited, but a very large exhibit of peonies was shown and many annuals and perennial flowers as well. The attendance, we understand, was good, and take it all together the exhibit was a substantial encouragement for our sister society.

PROSPECTS FOR MINNESOTA APPLE CROP.—Indications as far as noted in this office promise a good apple yield in our state this year, but few plums. Here are a few quotations from recent letters:

"The apple crop is good in this part of the state. No plums to speak of."
—Dewain Cook, Windom.

"Quite a crop of good apples around Preston. We shall ship a good many carloads this fall."—C. E. Snyder, Preston.

"The apple crop seems to be just a fair crop; some orchards are well loaded, some not so well."—Fred Cowles, West Concord.

"The apple crop this year seems to be fair to average. Plum crop is light but better than in the past three years."—J. F. Benjamin, Hutchinson.

"Apple crop generally quite full, but scab and curculio are injuring the quality very seriously in four-fifths of the orchards."—Clarence Wedge, Albert Lea.

"The orchard crop is fine, and we ought to have a splendid exhibit (at the state fair) this year."—J. M. Underwood, Lake City.

"Apples 75% of a good crop."—A. Wilwerding, Freeport.

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A Bit of Landscape Adornment on the Home Lot of Dr. H. M. Speechly, Pilot Mound, Manitoba.

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THE MINNESOTA HORTICULTURIST

Vol. 37. SEPTEMBER, 1909. No. 9.

The Growing of Perennials in Manitoba.

DR. H. M. SPEECHLY, PILOT MOUND, MANITOBA.

In presenting this brief notice of the garden perennials suitable for Manitoba, I make no pretence of giving an exhaustive account of such plants, but prefer to name the earliest, hardiest and most attractive types and, therefore, the most practically useful in a climate such as is common to your state and the Province of Manitoba.

If it were not for our bulbous and rooted perennials which may be left in the ground all the winter, we Northwestern gardeners would be limited to the short flowering season of annuals, such as will bloom from mid-July until the September frosts cut them down. With us frost spoils most half hardy annuals about Sept. 12th, leaving in protected gardens some hardy types still blooming, such as stocks and asters, phlox and verbena, and the snapdragons with the corn flowers. But we who grow perennials can fill in the dead period between May 1st and early July with many early and hardy flowers.

It is true that our spring and summer season of abundant flowers is limited to the four months lying between May 15th and Sept. 15th, when the succession of flowers is uninterrupted. Yet I have had the blue Siberian squill blooming in my garden on April 24th, while in late September tiger lilies, perennial phlox and even roses flower quite often—in fact, I have had an H. P. rose in bloom as late as October 3d, while all through October the heroic pansy holds the fort until black-handed frost wins out as November opens. The experience of other and better gardeners than myself has been the same.

One fact shortens the flowering period of my own district as compared with Winnipeg, Morden and some other sheltered spots. It is our elevation above the sea by nearly 1,400 feet. Given, however, a properly arranged protective grove on the north and west, and suitable hedges to the south and east, of caragana, erect honeysuckle, the soft maple or lilac, any farmer on our prairies can duplicate my experience.

We have one great advantage in our soil and subsoil. In ages gone by, when the Western prairies were submerged, a splendid black

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vegetable loam was deposited to a depth of from one to two feet over a few inches of clay subsoil resting on shale. This black loam when properly worked is admirable for flower raising. We do not on that account, however, neglect to dig in plenty of well-rotted horse or cow manure together with rotting turf and decayed leaves whenever possible. I like, too, to mix in a small amount of lime, as well as a few stones, which helps to hold the moisture and keep the roots cool in very dry times. In any case, whether perennials are very hardy or not, it pays to treat them well.

This leads us to consider the preparation of the perennial beds, or borders. Careful gardeners do not wait till the spring but get to work in the fall to put their flower beds into shape. The fall is the time to fertilize and to re-fertilize, to add to your stock of perennials and to thin them out for the benefit of both the plants and of some beginner, to burn the rubbish and to pull out the weeds. Grass, weeds and dandelions in particular should be ruthlessly pulled out in the fall.

After all is fixed our practice is to protect our beds with brush, leaves or strawy manure; but it is very important not to overdo this matter of protection, especially when you reflect that many perennials get along very well without any mulching other than snow. As an example, pansies, Arabis, and rock alyssum if heavily mulched are liable to rot in the early spring or to be attacked by grubs or flies hatching out in the manure. I prefer to grow them where leaves fall and mingle with the foliage of the plants themselves as they die down. Undoubtedly the best mulch is snow, if it will stay on the plants; but though we have an average depth of snowfall of two feet, our powdery, light, dry snow readily drifts and leaves bare places. This would not matter in the winter so much, because it is not the cold that kills our plants. It is the dangerous time from the end of March till the end of April that does the damage. Then it is that the warm mid-day suns melt the snow and causes the sap to run, only to be followed by keen, frosty nights with the thermometer close to zero point or even lower. It is chiefly from alternate stimulation by warmth and depression by cold that protection is necessary.

The early part of April with us is often so warm and dry that all snow disappears, but before April goes a cold dip invariably follows. However, after May 1st we do not fear these influences much. No, our greatest enemy all through spring and summer is the fierce sweep of the prairie winds, which, hot or cold, tear, rend, blacken and break to pieces any succulent plant.

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I wish to lay special stress on our early flowering perennials as being much less known and appreciated than the summer flowers. We will suppose, then, that the snow has left the garden during the first half of April and that by April 25 or thereabouts the lawn and flower-beds will be cleared of all protection. Then the first flowers to bloom will be almost certainly those bulbs which were planted from four to six inches deep in the beds or in the lawn itself last fall. Earliest of all with us is the blue squill, which generally shows its heavenly blue

Hardy shrubbery and trees at Dr. H. M. Speechly's, Pilot Mound, Man.

above the sod around about May 1st, though once our squills began to bloom as early as April 24th. I prefer to plant the Siberian squill beneath the lawn sod in a spot where water does not stand and where it will not be necessary to mow the grass early. I cut out a square of sod in the fall, loosen the soil beneath and put in a circular clump of bulbs, so that when the soil is returned the bulbs are about as deep as a prairie lily bulb would lie.

During the first half of May the Iceland poppy may precede the first tulips but is usually a little more coy than the squill and waits

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till frost will moderate. For hardiness and earliness give me the Iceland poppy, which rears a dainty, crinkled cup of colors, ranging from white to cream and through yellow to a deep orange almost to scarlet, over a dwarf but fern-like foliage, from May to August, if you will keep the seed-heads from developing.

Quite as early or even earlier the dwarf blue iris can hardly thrust its spear-pointed leaves three inches above the soil before the tightly-rolled, veined purple flower-buds will unroll themselves.

Next follow the early tulips, the Duc von Thols and the yellow Chrysoloras, with wondrous beauty of form and color, whose red horns poke through the black soil as soon as the mulch is removed and whose buds, sheltered by two sturdy leaves, wait till the last half of May before unfolding those glorious cups which

> ".....children love to stretch
> Their fingers down, to feel in each
> It's beauty's secret nearer."
>
> (Eliz. Barrett Browning.)

Pansies follow on and soon delight the eye with the variety and color of their open faces. Catalogues have a pretty way of telling the public that pansies, crocuses and snowdrops, not to speak of winter aconites, will bloom as soon as the snow goes. They may do so down East, but in the West they certainly do not. I may say in passing that crocuses and snowdrops do not grow really successfully with us.

One word as to the raising of pansies: It is just as easy to grow good, large flowered varieties as to raise the common small sorts. First get good seed and then treat it well. Therefore plant your seedlings at least four inches apart on a well-fertilized bed and treat them as if they are biennials. This year's seedlings which flowered in June will do well next year, but after that they will degenerate, so that it is best to root out all second season pansies. By the end of May ferns are rising rapidly amongst the stones or rocks in the shady part of the garden, where their fresh green will contrast strongly with the more silvery foliage of rock cress and rock alyssum. Sweet as honey are the odors of these two flowers, but the white Arabis excels.

This fall, through the kindness of a friend down East, I have planted two onocleas, two aspleniums and two aspidiums, as well as the hardy maidenhair. In our neighborhood I have obtained many shield ferns in the valley of the Pembina River, which are perfectly hardy and easily grown in my garden.

With June come the late tulips, the glorious gesnerianas, the old English types, the Parrots, the Byblooms and so on, which if planted

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amongst the greenery of columbines, larkspurs and irises will shine more gloriously than if set in formal patterns and beds. With these the columbine's flowers appear most dainty, when like clusters of doves or elegant insects they are poised on tall, graceful stems in many colors of blue, royal purple, creamy white, pink and yellow. In the same bed and in the same month the Oriental poppy flames like a beacon.

By this time the hardy, noble peony, after unrolling its red leaf stalks, has developed a glorious crown of glossy verdure which enhances the color of all other flowers as well as its own. Late in June or early in July the peony's tightly folded bud loosens its sepals

A flower nook in the garden of Dr. H. M. Speechly, Pilot Mound, Man.

of green touched with purple and quite sticky with a juice beloved of ants; then it puts forth, first, the edge of a coy petal; soon there follows petal upon petal, until the whole glorious bloom is unfolded, breathing a scent sweet as that of the rose, a globe of crimson, it may be, or else of white centered with a blood-red spot, or all cream and rose, or even variegated. This is a royal flower, which even in fading flings its petals down in heaps. So easy is it to cultivate, so grand a flower does it throw once it is well established that no farm garden should be without large clumps of this noble plant. One word of caution is in place. Avoid planting your peonies in too much shade, too much wind or too near growing trees.

Something like it in root and leaf, but like a gloxinia in flower, is the Chinese plant known as incarvillea Delavayi. It is hardy down

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East, but I am anxiously awaiting the verdict of next spring to ascertain if it is of permanent hardiness in this West.

Very hardy and attractive is the iris family, whether German, English or Japanese, with a growth of sword-like leaves which is almost too prolific. When the jointed stems raise aloft their flags, all bearded and wonderfully veined, you feel struck by the mystic beauty of the "poor man's orchid." Unfortunately our prairie winds work dreadful havoc on the tender falls and standards of the iris, which therefore need protection from wind. The same may be said with reference to the old favorite, the bleeding-heart, whose fleshy stems and festoons of beauteous pink and white hearts are liable to much damage from wind. Time does not permit me to allude at length to the dainty dicentra eximia, the generous achilleas, the sturdy yet stately larkspur, the unfailing tiger and orange lilies, the curious aconite, the yellow foxglove, the quaint platycodons, the greedy golden glow, the old-fashioned but delightful sweet Williams and glowing dianthus tribe, and the soft colors of perennial phlox, all hardy in our West.

Thoughts on the Breeding of Hardy Fruits.

PROF. N. E. HANSEN, BROOKINGS, S. D.

In opening this discussion I wish to say for the benefit of the new members that the differences between Mr. Patten and myself are not serious. We have sharp debates at least once a year, but we are both over the effects very soon. There is no man in the society or anywhere else who honors Mr. Patten more than I do for the work he has done. I have some little idea of the tremendous energy and patience it takes to do the work he has done, and the expense that must necessarily be incurred, and doing it without the aid of the state is something for which he should have extra credit.

How may we get hardiness into a variety? Mr. Patten thinks it can be obtained by raising seedlings from tender varieties. I maintain it can only be done by crossing with some hardy variety. Hardiness cannot be obtained from a tender race merely by selection within that race. Nature can do such things but requires thousands of years. In Nature's calendar a thousand years is but a day. It is best that we hurry such work by crossing with some variety that is already hardy. Pure seedlings of Ben Davis or Jonathan will not prove hardy. While I admit the possibility of a hardy imitation ap-

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pearing among thousands, the possibility is so remote that it is not a promising field.

Yesterday Mr. Patten acknowledged he obtained no hardy seedlings from Spitzenberg and Yellow Bellflower, and not until he took seed from the Duchess of Oldenburg did he obtain a hardy seedling, Patten Greening. The Duchess is a Russian apple and has given us many valuable hardy seedlings—more than we need of early apples.

Surely the hardiness of Patten Greening is not from the Rhode Island Greening, its supposed male parent, because that is a very tender variety. And probably all our other really hardy Northwestern apple seedlings have some Russian or Siberian blood in their pedigree. Three centuries of effort in North America have not given us a single hardy apple from the race of apples indigenous to the mild, moist climate of Western Europe.

Mr. Patten and myself are like two physicians called in consultation on the same case: we do not agree on the diagnosis but are both working to the same end. I still maintain it as an unprofitable undertaking for members of this society to plant pure seed of tender varieties, like Ben Davis, Esopus, Spitzenburg and Northern Spy, in the hope of getting that hardy winter apple for which this society has offered a premium of one thousand dollars. But if the blossoms are first crossed with some truly hardy variety, the case is entirely different. The former method appears to me to be the beginning of a ten-thousand-year-job, the latter one that I don't believe will be completed within the next decade.

This in brief is the position which I maintain, but I am perfectly willing to be convinced to the contrary. No one need follow my advice. But the history of multitudes of apple seedlings in America, many equal in size, color and quality to any on exhibition at this meeting, prove my proposition. The original seedling tree appeared hardy but under the test of nursery propagation the variety proved as tender as a quince, nectarine or peach. I am no longer enthusiastic over any new apple seedling—my first questions are: (1) What is its behavior in nursery row? (2) Has it stood the test of propagation? (3) What is its pedigree?

I do not wish to insist that this method is the only one. My usual method is to find out what the rest of you are doing and then go ahead and do something different. This is division of labor. The field is big enough. But I prefer to work with Nature and not against her. And if I "hitch my wagon to a star," I prefer to pick out a star that is going in the right direction.

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I have had occasion to apply the same philosophy to agricultural problems, notably the problem of a hardy alfalfa, which explains why I once endured the deserts of Turkestan and twice the wilds of Siberia. It is wise to take full advantage of all that Nature has done for us in developing hardy plants. Improve the native species and get all that other continents can furnish. Get hardiness from the wild species and size and quality of fruit from the tame.

Mr. C. G. Patten (Iowa): I wish to say in reference to this work of breeding, it is a large problem. It is too great to undertake to discuss it, in the limited time we have to devote to the subject. We must not lose sight of the fact that this year and next year and the year to come are unlike in climatic influences on the germs of the seeds that they produce. This year, in my judgment, has been the year of all the years I have seen, especially where we have so many of these combinations, from which we can go forward. Now, if in crossing tender species on hardy species, on the wild crab of this country, we are doing as Prof. Hansen says, getting hardiness—getting tenderness out and hardiness in—you will find in doing this work that you will have really tender seedlings from this crossing work right out of the wild crab. I have tender seedlings from the cross of the Siberian, and you must select even that. You will see it is no absolutely positive thing that when we cross, we will say a Grimes Golden on the Siberian crab, or the Grimes Golden on the wild crab, it is with the absolute assurance we will get a perfectly hardy tree, really throwing into this new seedling more than one-half of the hardiness of the native wild crab. I have demonstrated it on my ground and demonstrated it on the seedlings I have on the table.

Now, as I started to say, the climate in which these apple seedlings are bred has much to do with the hardiness. If we have a normal season we expect to get better seedlings than in an abnormal season, and so this matter depends a great deal upon the climatic conditions.

Prof. N. E. Hansen: I showed on the first day of the meeting what I believed to be promising material for the plum and cherry. In my new plum seedling we have a tree that will grow almost like a Carolina poplar. As the poultry breeders would say, I do not know how certain individuals will "nick." Surprising results often are obtained. There is a multitude of possible combinations. How many different pairs can you make out of a pack of cards?

Mr. A. J. Philips (Wis.): You struck the wrong crowd; they don't know anything about it. (Laughter.)

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Prof. N. E. Hansen: The bees may do the work for us. That is one chance, but it is not a very good chance, and as far as 95 per cent of the seedlings we now have being the result of chance, that is true, but "chance" has been at it thousands of years, and here in the Northwest we have been at it only a few years. That is not a fair comparison at all. Visit any greenhouse, and the florists will tell you what they have done by cross-breeding. At the "International Conference of Plant Hybridizing," held in London last year, it was a great pleasure to see the marvelous things done in that direction. In Europe there are men who spend more time on such things than we do in this country.

Now one of my new plum trees lacks but two inches of being twelve feet high. It's from the seed of a wild plum; the father is an apricot plum from China, Prunus Simoni. The male parent has dominated the character of this tree. Mr. Patten objected to thorns; I don't like them myself. I have fifteen or twenty seedlings of this same pedigree, but those freest from thorns are apparently not quite as hardy as the thorny ones. Judging by this example, it looks as though the thorns had something to do with hardiness. We will get thornless gooseberries and raspberries by and by, but we will have to bear with thorny ones a little longer.

Getting down to my talk, I find that the Japanese plum and our western sand cherry mate well in crossing. Under propagation the trees grow from four to five and three-fourths feet in one year from the seed. One of the best and most promising bore fruit this year; the male was the Sultan, one of Burbank's best plums. The fruit is excellent in quality, blood-red in color and the flesh is firm. The trees are strong and stocky, but the fruit is a little dull in color, red and yellow mixed. The quality is most excellent, equal to any green gage plum, at least in my opinion. It is perfectly delicious in quality.

Mr. Elliot: Can you state whether a tree is going to be strong and vigorous at a year old?

Prof. Hansen: I should judge a nurseryman would not be satisfied with less than a growth of three feet from the bud in a tree.

Mr. Elliot: We have discovered in growing seedlings that one seedling lacked only three inches of growing three feet last season.

Prof. Hansen: My hybrid of the sand cherry with the European apricot, the latter as the male parent, gives us trees about four feet in height from one year buds on native plum stock, with fruit buds that may bear next year, but they do not show as great a vigor as the combination of the sand cherry and the Japanese plum. I have a hybrid of the sand cherry with a peach—there, that is one great secret leaked out. One year trees have fruit buds. The peach is the male parent. It looks so much like the sand cherry and apricot cross in foliage that I am a little in doubt. We had hybrids with the peach as a female and the sand cherry as the male, and although we did the work the best we knew how, it seemed to give us a perfect peach in leaf—and it killed out like a peach, too. (Laughter.) So I defer positive statements. There are some other very odd combinations coming on, but I don't want to talk about them as yet.

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Col. Brackett: Is that a three-year growth on that one tree?

Mr. Hansen: Yes sir, This one lacks two inches of being 12 feet. Here is a half sister to it (indicating); it has the same father in either case, the Chinese apricot plum. This has been very much dwarfed and run over by being too close to the others. This Chinese apricot, Prunus Simoni, appears prepotent in transmitting size and quality of fruit.

Capt. A. H. Reed: Was it the ordinary type of the plum and sand cherry?

Prof. Hansen: Both were selected. But I don't wish to get away from my text. This is a very interesting plant and a very interesting fruit. It will please any one, whether you call it a plum, cherry or apricot. We tried to give it a name by calling it "sandcot," but that didn't sound right. (Laughter.)

Mr. C. S. Harrison: That may be budded on the sand cherry?

Prof. Hansen: No, that would dwarf it still more; that would make it a plum.

Breeding New Fruits by Crossing and Selection.

CHAS. G. PATTEN. CHARLES CITY, IA.

The first thing I wish to say is to make a correction of a little talk I made yesterday, that is, in reference to the work of planting seeds that I have done. I want to say that it was work that was done in connection with the State Horticultural Society of Iowa. The plum-breeding experiment so far as it has gone has been on my own initiative, but the last year was rather unfortunate for that kind of work in gathering seeds of these species. In using some of the pears that I have produced this year from twelve or more varieties, using the Kieffer on one occasion, I noticed there was a difference in size and form and general appearance of the seeds of three pears of the same variety. They were taken from the same tree, a top-grafted tree, of a chance pear, on which I have grafted quite a number of varieties as well as the Kieffer, from which I find they had received their pollination, each one from a single specimen of the Kieffer, each a different variety of pear grafted on that tree. This work has been done in a rather desultory manner as it came along, and finally I got them in a little better shape as to size and form and number of seeds in each pear. There is quite a number of seeds, but they vary as to each specimen of pear—the largest number is ten seeds—from seven to ten seeds. Then I had other places where I had the Kieffer that was not subject to cross-pollination, it had to depend on its own pollination, and from six of the finest Kieffers I had grown,

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I obtained eighteen seeds—I believe out of six pears. Of all I cut where they were self-pollinated, there were only two or three, or at most four, seeds in the pear—except in this one there were from seven to ten. So from that we get a lesson as to the value of cross-pollination. These seeds were very much alike and rather imperfect.

I had the question propounded by one of our scientific horticulturists as to whether or not we could cross the native plum with the European. I have demonstrated the fact that we can; I have done it here. These pits are thickened in each case, and there is no question as to the crossing of these varieties even though we did not make it ourselves. Here are two of the Japanese plums (indicating) showing the particular form of the Japanese. Here is a little specimen of the brown plum—four black specimens, as they will appear to you—but they were full of fruit of a perfect cherry red, colored like some of our European varieties of cherries. All of these plums when taken in the house turned brown, none of them red. Here we discover that we have in our native plums specimens that are very much inclined to brown, and that is their hereditary nature.

We are just beginning to wake to the idea that we have long neglected our native varieties of fruits, as in the strawberry and in the nuts—such as the hazelnut and the black walnut—and I am cross-breeding the black walnut with the English walnut; I have become interested in seeing which is the better fruit. You will notice that this one has a thin shell and has a large amount of meat; it is almost like the English walnut. Here is another one (indicating) that has a very thin shell, and contains almost twice as much meat as the ordinary black walnut. In this one (indicating) you will notice the walls are very thick, which makes the nut hard to crack; the shell is so thick that there is very little room for the meat. These cases in the cross-breeding problem become very interesting. I pollinated a tree that I planted thirty-nine years ago. Perhaps there is a little sentiment about that, but the tree is almost two feet in diameter, and I wanted to procure cross-bred nuts from that tree.

Here are some of our hickory nuts. The two on the lower side (indicating) are from Cedar Rapids. They were selected on account of the quality of the meat and the thinness of the shell; the one above here (indicating), the meat has been taken out, but it shows the thickness of the shell, which is actually thinner than the shell of the English walnut. I find it true on my own place, that the hickory nut is a better nut when cross-bred among its own kind. It was quite a surprise to me and very interesting. I have brought these here to

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show the difference in the thickness of the walls of the nuts. As we progress in this matter I think we shall find that it is not only very interesting but it is going to be of very great value in our horticultural work. We should save the best nuts that Nature has been producing for us, and if we knew of their value we would not be chopping down many of the very best in our state, and I presume also in Minnesota. We have the pecan in our state, the farthest north it has been discovered in the Mississippi Valley, and the trees were nearly all destroyed before they were noticed. It was found by Col. Brackett, who was with you last winter. I have a few trees growing on my place, and I think that is the farthest north of any place that they are growing.

I wish to say just a word in reference to the preserving of the pollen. Mr. Ware, who just preceded me, said it was best not to close up the pollen too tightly. That is true, but in my experience I have had pollen sent from California of the cross-bred Kieffer pear, and that pollen thirty-three days afterwards was potent, and in the twenty-five trees I obtained from that cross one tree had exactly the same angular form of the parent tree, the Winter Nellis, and showed the prepotency of that pear. If we dry the pollen carefully we can enclose it, and although I would not say that we can do it in every case, because I have not had experience, yet I have used plum pollen and pear pollen from California, and with the greatest success without question. It is only a question whether we will use care enough to dry it before it is encased, and keep it absolutely from contact with the air.

Mr. A. Brackett: I have been asked a question, whether English walnuts, or any other, if they are allowed to get perfectly dry, will grow.

Mr. Patten: I think it injures them when they are dry. It is impossible to grow the pit when it is perfectly dry.

Mr. Probstfield: I have had considerable experience with black walnuts, and by securing those that were dry, not by design, and planting them, not a single one grew; they would not germinate at all.

Mr. F. W. Kimball: Mr. Patten, I have a chestnut tree on my place, eight or nine inches in diameter, bearing fruit.

The President: Do they kill out to any extent?

Mr. Patten: They have lived until they are eight or nine inches in diameter, and make good trees. I have no question but that we can grow trees if we want northern chestnuts.

Mr. A. B. Coleman: How deep would you plant the nuts?

Mr. Patten: Two to two and a half inches deep. I plant mine and cover them with litter or manure.

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The President: You can take acorns and chestnuts and sow them just like you would beans.

Mr. Probstfield: If the season is favorable acorns will grow right on top of the ground. I have seen squirrels drop them, and they sprouted right on top of the ground.

Rev. C. S. Harrison (Neb.): Have you tried the Japanese walnuts?

Mr. Patten: We tried one, and it did not prove hardy with us. We did not fruit it.

The President: We did, we had a half peck.

Mr. Harrison: How did it do?

The President: It did pretty well. I think Mr. Wilwerding reported that he had eight to ten bushels.

Dr. A. H. Street: You can raise pecans as far north as where I live.

Mr. Patten: I have several trees of that nut.

Mr. D. T. Wheaton: Can you improve hazelnuts by cultivation?

Mr. Patten: We can improve anything in nature by cultivation. It is only what we have been doing along with selection and cross-breeding.

Mr. Geo. J. Kellogg (Wis.): There has been a good deal of inquiry as to the treatment of apple and pear seeds before planting.

Mr. Patten: My plan to save seeds is to keep them dry in envelopes, and about the fore part of March soak them thirty-six to forty-eight hours, changing the water after they have been in ten hours, and once again would be better. Then I stratify them in the open ground and allow them to freeze, and in that way I grow them about as surely as good corn.

Dr. Street: Do you let them dry out?

Mr. Patten: I do.

Mr. C. S. Harrison: You plant in the fall?

Mr. Patten: Almost invariably in the spring. I wish to say one word in reference to the black walnut. I have no doubt you have valuable varieties in your state, and we find some fruits are so much superior to others that when we grow the timber we want to select the best seed from the best trees. In that way we shall get something that is especially valuable to the people of the United States, and especially in our part of the country where we must work in accordance with the conditions that obtain, and it is with these native fruits that we should make a strong effort.

Mr. C. S. Harrison: Can the walnut be crossed with anything?

Mr. Patten: Mr. Burbank has crossed the walnut of California with the English walnut, and I don't know why it should not be done.

Col. C. W. Gurney (S. D.): I do not like to have that statement in regard to the probability of growing chestnuts go into your report without a warning. Mr. Patten says he has trees eight or nine inches in diameter, which seem to be good and sound. We had quite an experience in Jones County, Iowa. It is thirty or forty miles north of Dubuque. Our trees grew to be of about that size, and then they died. The tree would die from bottom to top on one side,

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sometimes on one side and sometimes on the other, and in a year or two the tree would die entirely. Nearly all of them died about the time they came into bearing. I do not believe the chestnut is a safe tree to plant as far north as this. It makes a difference where the seed is grown. The seed of those plants was grown in New Hampshire, and possibly if it had grown in the western or northern part of the country it would have been better. For general purposes I do not believe it would be safe to plant them as far north as this.

Mr. Patten: We have the most abundant evidence that by repeated adaptations we can develop and rapidly develop hardiness, as is shown by wheat taken from your own state to other parts of the country. It is a question as to where these seeds come from. For instance, if we got these seeds from Iowa and brought them north then we would have made an advance over anything that you could possibly get from the Atlantic coast. If you had a half a dozen places to select from you would surely find what you need from these half dozen places, and one would probably prove a better tree than the other five. We have all these things to consider in the breeding process.

Mr. Brackett: Just one word about the chestnut. I was born in southern Iowa, and I know on our place we had chestnuts, and I also know by actual experience that they could not be transplanted. They always had black heart and died. When the trees were cut down we found it came from the root.

Mr. C. L. Richardson (Wis.): Take the Glen Mary strawberry. When it originally came from Maryland it was not perfectly hardy in Wisconsin. One of the earlier growers kept at it for five years, and finally succeeded in gaining hardiness, until at the present time there seems to be no difficulty in carrying it over winter in any part of the west.

Prof. Shaw: I would like to ask Mr. Patten whether in his judgment improvement can be more rapidly made by selection or crossing.

Mr. Patten: Perhaps under our present conditions we will get our best start from selection. We have many things that we could cross from which we might obtain what we desire at once—I have no doubt we could—but I am in favor of rigid selection.

Prof. Shaw: Mr. President, will you favor me with your own judgment?

The President: I generally agree pretty well with Mr. Patten. (Laughter.)

Cranberries should be given clean culture, if possible, and no weeds be allowed to grow on the marshes. On the clean marsh any injury done to the vines is more easily noticed, and also the insects that are found flying among the vines are then liable to be only those which have business there. A clean marsh is also easier to be sprayed for pests.

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Bulbs and Plants for Fall Planting.

E. A. SMITH, VICE-PRES. JEWELL NURSERY CO., LAKE CITY, MINN.

In this article it must be understood that reference is made principally to out-of-door bulbs and plants which are hardy in the Northwest.

There is a distinct advantage in planting in the fall such trees, shrubs, herbaceous plants or bulbs as can be successfully planted at that season of the year. Some bulbs must necessarily be planted in the fall; they need the action of frost upon them in order that they may blossom early in the spring. They also need to be in the ground

Row of Japanese iris in Jewell Nursery.

to get the first effects of the early rains. Failure through planting bulbs in the fall is due to either poor work, the setting out of poor stock or to conditions which prevent their taking new root, or on account of early frosts or too dry soil.

Soil.—Bulbs, such as tulips, gladioli, etc., do best in a rich, sandy loam, decayed manure being used for fertilization, it being better than commercial fertilizers, but it should not, however, come in contact with the bulbs. It would be well to mix sand in the rows in which bulbs are planted to prevent this contact and decay. It is better to give the ground a light mulching after the first freezing. The soil should be deeply spaded and pulverized before planting.

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How to Plant.—Always set the bulbs upright. The pointed top should be toward the surface. Many people have been known to plant bulbs the wrong side up and then wonder why they failed to grow.

Bulbs can be used for formal effects or to give natural effects.

First, for Formal Effects.—In those beds where the same color and flowering is desired at the same time, special care must be taken. The bulbs should be of uniform quality and size. The best are the cheapest, because they give the best results. Plant each bulb at a uniform depth by making the opening with a trowel or similar instrument.

Second, for Natural Effects along Borders of Lawns, Shrubbery, etc.—To obtain these natural effects, plant at uneven depths, uneven distances, different sizes of bulbs. In this way the season of bloom is lengthened.

Third, to Secure Natural Effects in Grass.—Scatter the bulbs carelessly and plant them where they fall. Drive holes in the ground with a pointed stick or other instrument and put in a little fine soil or sand.

Tulips.—Tulips head the list of bulbs for fall planting. These should be planted about three or four inches deep. If planted in formal beds to represent a formal design, they should be planted four to five inches apart; if in a border, they should be given more room. After the bulbs are planted—which can be done from October to the time the ground freezes—the bed should have a top dressing of leaves or coarse manure. This should not be put on until after the ground is frozen three or four inches. The covering should be taken off in the spring just as the growth peeps through, leaving just a thin cover on the ground. It is not necessary to dig the bulbs after they are through blooming; annuals can be planted between the tulip bulbs, thus making the bed attractive during the summer. Geraniums, verbenas, phlox, petunias, zinnias, salvias and many others are good for this purpose. After the tulip blossoms have dropped, which will be about the end of May, cut the tops down, leaving about two leaves, so as to mature the bulb; then set out other plants between. The foliage of the tulip will soon wither and die. In the fall, clear off the bed and give it a good coat of manure.

Good bedding varieties in reds are, Artus, Belle Alliance, Cardinal; in whites, Pottebakker, La Reine, L'Immaculee; in yellow, Yellow Prince, Chrysolora, Canary Bird; in pink, Cottage Maid, Silver Standard and Mary Ann. Striped Kaizerkroon and Duchess of Parma are double tulips and not much used for bedding, though they are

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very fine. The late flowering, or Cottage, tulips are good for planting in the herbaceous border. They grow very tall and have a wide range of color. They should not be dug or disturbed, as they will naturalize themselves and multiply very rapidly.

Hyacinths.—Hyacinths make fine beds and require the same method of planting as tulips. Set the bulbs on sharp, clean sand, as they sometimes decay if in direct contact with soil. Plant somewhat deeper than tulips. The mulch should be removed in early spring. Bedding hyacinths cost very little more than tulips and make very fine beds or borders.

Hybrid perennial phlox.

Lilies.—Many of the lilies are hardy and good for the garden, herbaceous border or even for an ornamental hedge. They bloom in July and August. These should be planted deeper than tulips or other bulbs. The large growing varieties should be planted about eight inches deep. Place the bulbs on a bed of sharp sand to prevent decay. The fall of the year is a good time in which to set lily bulbs, for they can be transferred without ill effects. Most of these lilies are similar in shape, but differ somewhat in size and color. They do well when planted in partially shaded locations.

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The Tiger lily is known everywhere. It blooms in August. It will even grow when neglected for a number of years. When planted in groups or in hedges it is beautiful. Height two to three feet.

The lily Candidum, color white, is fine. It should be planted in early September. This is also called the Madonna lily—it is the lily of literature and history. It blossoms in June. Height two to three feet.

The Elegans is a magnificent lily—tulip shaped; blossoms large,

A clump of platycodon, or Chinese bellflower.

exceedingly bright and handsome. It is robust, hardy and a free bloomer. Height about two feet.

The Speciosum rubrum variety is a fine lily—grows two to four feet in height; flowers pinkish red; very hardy; blooms in August.

The Tenuifolium is one of the earliest bloomers—usually arrives in June; is fairly hardy and worthy of cultivation. Grows two feet high; has finely cut foliage, slender stems; color red.

The Superbum is a gorgeous lily. Grows three to four feet in

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height. Has orange red flowers spotted with scarlet; foliage dense; blooms in August.

The most dazzling of all the lilies is the Auratum. Unfortunately, this variety is not permanent, and has to be renewed every third or fourth year, but the bulbs multiply and may be divided and renewed in this way. Flowers are large, fragrant and frequently marked by numerous purple spots and bands of yellow. Blooms in August. Height three to four feet.

The Canadense is red with black spots. Grows about two feet high. Blooms in July.

Lilies of the hemerocallis type may also be planted in the fall. The best are Kewanso, double, tall and yellowish red; height five feet. The Fulva is also tall and yellowish red, but single, height five feet; and the Flava, which is yellow and single—height three feet. These are tuberous and are not properly bulbs.

Narcissus.—Single narcissus or daffodils are fine for border planting or natural effects in grass or shady places. They bloom later than tulips. They should not be dug or disturbed, as they increase in size and give more flowers each year. Such varieties as Emperor, Empress, Golden Spur, Trumpet Major and Victoria will be found perfectly hardy and very satisfactory. The Pectious are very fine for planting in grass. Do not attempt any of the Polanthus varieties out of doors, as they are not hardy. Leave them for house culture.

Miscellaneous.—Scilla Siberica, blue; snowdrop, white; and crocus, in assorted colors, are fine for planting in the sod. They grow about four to eight inches high and bloom with the first days of spring. To plant these in sod, use a blunt stick and hammer. Drive holes in the sod about two inches deep—drop in the bulb and fill with some fine sifted soil. In this way you will not injure the lawn or make it look as if it was dug or disturbed.

Spanish iris deserves a place in every garden. They make a very fine showing with their orchid-like flowers. They are fine for cutting and last well.

Among herbaceous spireas are the Japonica spireas, the Gladstone and Queen Alexandra being excellent. They are tuberous-rooted and do not really come under the head of bulbs, but they may be safely planted in the fall. The Queen Alexandra is pinkish white, low growing, very handsome and somewhat resembles the Sorbifolia in shape. The Gladstone is very similar in form and growth to the Queen Alexandra; color white.

The planting of fall bulbs each year is becoming of greater importance in the Northwest, because they are being planted in greater

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quantities. There are many among the herbaceous varieties which could be set out with safety in the fall, such as phlox, paeonies, pyrethrum, golden glow, etc., but they do not come within the province of this paper and would furnish abundant food for thought in themselves.

Work of the Minnesota State Forestry Association.

S. M. OWEN, PRESIDENT, MINNEAPOLIS.

I want to say a few words to you about the Minnesota State Forestry Association, about its mission, about the mission of state forestry associations in general. So little understood are they that I think they need an introduction to you here this afternoon. These state forestry associations are not on the same basis with other organizations that are promoted by liberal appropriations from the states and the general government, but they are little affairs and are not adequately supported by public funds, and I want to convince you that this state forestry association, as well as other associations engaged in the same line of work, is of sufficient importance to require and receive some help from the state. We are hearing a great deal these days about those large enterprises in the way of tree planting, principally national forest reserves that are being improved by the government, and large state reserves that are being conserved in the same way, that are being re-planted and carefully protected from fire so they may become valuable forests hereafter. But in this class this association does not stand at all; yet it has a mission, even more important than those I have just spoken of.

If the increase in the farm area of the state has been as great since 1889 as it was for ten years prior to that time, we must have now in the neighborhood of thirty million acres of farm area in Minnesota. It is a very conservative estimate to say that five per cent. of those acres are non-agricultural; that the only crop that will grow upon them is a crop of trees, a timber crop. Approximately then, we have 1,500,000 acres owned by private individuals in this state, owning an average of about 150 acres each, the average size of our farms—the average size of our farms is about 146 and a fraction—about a million and a half acres of non-agricultural lands, but lands well adapted to the growth of forests. It would take but a very few years to stock up these acres with forest timber. With such an area of forest as that growing in the hands of private individuals, we have made a beginning, and forty or fifty years hence when these areas have

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become commercially productive they will still be in the hands of individual owners. It will be impossible to monopolize these lands. There is talk we hear now of great syndicates to take possession of all that remains of the timber lands, that these great combinations of wealth will gradually acquire all that is left, and such associations as these will act as a check to prevent such a condition of things. The object is to do everything in its power to promote the growth of timber on these non-agricultural lands of the farms of the country. Remember I am speaking only of farm areas.

I cannot conceive of any more important work that a society or organization can be engaged in than in promoting this kind of tree planting. If this were done throughout our country, in the various states with non-agricultural lands that are now on the farms in the United States, if those lands could be planted to forest groves, in from forty to fifty years that sort of land would grow a timber supply in our country that would yield a wealth at the present price of lumber of millions of dollars at least. What lumber will be worth when these forests become of commercial size no man can tell, but judging from present indications lumber will be one of the precious things of earth at that time, and if we are not careful it will be still more precious, because our forests will be in the hands of a few people comparatively, who will monopolize them and make us pay any price they please for any lumber we may be compelled to use.

This association then is organized for a great purpose, a purpose that has a far-reaching effect, the purpose of growing forests that will forever be in the hands of the people and that can never be taken from them, because they will be grown on lands owned by the people, by individuals in fee simple.

This association has still another mission to perform. You perhaps are not aware, many of you at least, that connected with this association are some of the most intelligent and expert foresters in the country, educated foresters, men who are educated thoroughly as to the kind of trees to grow and how they should be cared for and harvested when mature. These young men who are intelligently and thoroughly educated to do the work in this direction are prepared to show the people of this state how to plant trees, the proper trees to plant, and how to care for the trees so they may grow into value as well as to find the value when grown. I want you to come to them to get whatever information you desire. They have properly and industriously set themselves about to learn and to inquire and to do every-

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thing in their power, and that is a good deal, to help plant these areas I have been talking about.

Now, I mention these things only to impress you with the fact that here is an organization with such possibilities, with such instrumentalities in its hands, and yet it gets not one dollar of support to carry on its work. Whatever it gets it gets from the private purse, and that is slender. The work these young men are doing is indeed a noble and patriotic one.

Afforestation in the Nebraska Sand Hills.

C. L. FRENCH, ST. PAUL, MINN.

In the year 1902, President Roosevelt set aside large tracts of land through the west in his sweeping movement for the conservation of natural resources, and he included two hundred thousand acres of land in Nebraska for the sole purpose of planting trees, as it was plainly seen at that time that this land was not good for agricultural purposes, and in a treeless region the increasing demand for timber and fence posts would make forest lands of great value. Whereas at first these lands were only supposed to be used for tree planting purposes, they developed into being of greater importance for the present anyway, in controlling the grazing of the state. This became so apparent in 1906 that three hundred thousand acres more were set aside for this purpose, having been sanctioned by the cattlemen, as they found it cheaper to pay the government thirty cents per head for the summer to graze their cattle on the reserve, where they were permitted to fence, than to run their cattle at large and hire enough men to keep them under control. This last movement was also brought about by the sudden inrush of settlers that took place in 1902, when Senator Kinkade had a bill passed making it possible for a man to homestead six hundred and forty acres of this land, and the cattlemen began to realize the necessity of holding some land on which to graze cattle.

The national forest lands in Nebraska are located in the central western and northern part of the state, being divided into three divisions, namely, the Loup, North Platte and Niobrara.

The Dismal, or Loup, division, as it is known now, is located in the central part of the state, 225 miles from Lincoln, and consists of 85,000 acres of the roughest land in the state. It is triangular in shape, being bounded on two sides by the Dismal and Middle Loup

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rivers, which join at the apex. The general topography of the country is very hilly, the hills ranging from fifty to one hundred feet in height and rising at an angle of five to fifteen degrees. The soil consists of a light drift sand which keeps shifting from one hill to another during the spring, when they have the high winds. There is some grass in the pockets and on the hills, but it is of poor quality, consisting mostly of bunch grass.

The North Platte division is located ninety miles west of the Loup division and is the largest, consisting of 300,000 acres. The hills here are more rolling, the soil being of better quality and has more of a grass cover. This reserve is used more for grazing purposes, although a few trees have been planted there.

The Niobrara division is located in the northwestern part of the state, consisting of 123,000 acres and is bounded on the north by the Niobrara river. This land is somewhat similar to the North Platte division and is used for grazing purposes, although on the northern border there are a few bull pine growing naturally.

The nursery is located in the northeast corner of the Loup division, on the banks of the Middle Loup river. It consists of two and one-half acres of level land under seed and transplant beds, and six square miles of fenced land in the hills, used for field planting. This is the largest of the government nurseries and is fitted up with all the modern improvements, consisting of a concrete house for the supervisor, a good frame bunk house and mess for the men, a windmill and reservoir, with water piped all over the seed beds, and an irrigation system run by a gasoline engine, the water being obtained from the river.

The work commences early in the spring, as soon as the frost is out of the ground, and continues till the middle of May, when the season is too far advanced to make planting possible. The first work in spring is the plowing up of the seedlings and transplants, placing them in stacks or heeling them in, till they can be handled. This work is done by a crew of six men, having a tree plow and a mule. The tree plow extends in the ground about a foot with a cross piece on the bottom to loosen the dirt and cut the tap root. The trees are pulled by hand and placed in boxes, care being taken not to let the roots be exposed to the wind and sun. The boxes are taken to the storehouse, where they are unpacked and stacked, the roots being wet and placed in the center with the tops pointing outwards.

This stacking of trees is a new method. It has been tried only in the last few years and works very well, as trees can be handled

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faster and take up less room than by the old method of heeling-in.

While this work is going on in the nursery, another gang is working in the hills setting out trees in their permanent position. This work is carried on by men in gangs, two men constituting a gang. The first man is provided with a spade, and his partner with a pail and trowel. The spader digs a square hole every three feet, the depth of his spade, and places the dirt to one side, the planter following him with his pail of trees, placing one in the hole, being very careful to keep the roots spread and to tamp the earth down firmly. Two men can plant in an eight-hour day about one thousand trees by this method. Great care has to be exercised in the handling of trees in the hills to keep the roots from being exposed to the direct rays of the sun and the drying influence of the wind. This is done by the wrapping of the roots in wet burlap before leaving the storehouse and keeping water in the pails while they are being carried by the planter.

After the seedlings and transplants have been taken from the seedbeds, the ground is leveled and made ready for transplanting the seedlings and the sowing the seeds, which takes place about the first of May. The preparation of the ground for the seedbeds consists of rolling and leveling, the first to compact the soil so as to assist capillary action, the second to make it possible to irrigate during the dry months of summer. The seeds are sown broadcast, first being prepared with a coat of oil and red lead to keep the birds and rodents from picking them up before germination. Then they are covered with a light coating of soil, which is put on with a sieve. The beds are covered with a low movable shade frame, made of slating placed on two by four stringers sixteen feet long, making it possible to remove them during damp cloudy weather to eliminate the "damping off" fungi as much as possible.

The transplanting is carried on by a crew of eight men. There are three operations necessary in this work, making the trench, threading the board, and placing the boards in the trench and tamping. The trench is made with a "V"-shaped iron cutting edge, fastened to a pipe handle about four feet high. This instrument is worked by two men, one on either side, and is forced into the ground by pressure on each end, with a to and fro motion, which will open up a trench ten to twelve inches deep in four or five strokes.

The next operation consists in threading the board. The board is made six feet three inches long, six inches high, and one inch thick, fitted with a handle and a strip one inch wide nailed to the face at the bottom with fifty notches cut in it, and a movable strip to be placed

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over the tops of the seedlings to hold them in the notches while they are being carried from the table to the trench. This strip is held in place by revolving buttons. This work of threading the boards and carrying to the trench takes four men to keep up with the trencher and tampers.

After the board is placed in the trench, two men break down the edge of the trench with a wooden tamper, and press the soil around the roots as firmly as possible, when the strip is removed from the top of the seedlings and the board taken away, leaving the trees in a straight row one and one-half inches apart. The rows are placed every six inches, making the seedlings in the transplant bed all at an equal distance, that of one and one-half by six inches.

By this method a crew of eight men can transplant 50,000 trees in an eight-hour day, at the very low cost of sixty-five cents per thousand. This is a comparatively new method, but is working with great success and is reducing the cost very much over the old method of dibbling.

The work up to the present time has been experimental. The first thing that had to be determined was the species of tree that would thrive there and be of commercial value. The first species selected was the jack pine, owing to the sterile soil it will thrive in and the rapid growth it makes. In 1903 several hundred seedlings were shipped from the northern woods of Minnesota and planted on the north side hill overlooking the nursery. These trees took root and thrived so well the first year, they planted seeds in seedbeds the following year, and now this tree is used almost entirely for planting there.

They have in the last few years tried other species, such as bull and Scotch pines, Douglas fir, elm, maple and cottonwood, but with the exception of the bull and Scotch pines, none have been set in the hills to give them a trial, although in the nursery, on the low, moist soil, they thrive very well.

The bull pine is a native of northern Nebraska and grows very well in the sand hills, but it is rather slow growing and, owing to the long tap root, is rather hard to handle, but I think in time it will be the principal tree used in this work, owing to its value and the ability it has to send a long tap root into the ground and get water at great depths.

The Scotch pine has been planted to some extent in the hills and is making a good showing but has not attained size enough to tell

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whether they will be low and bushy, like the majority of Scotch pine in this country, or straight and of some commercial value.

Besides experimenting on the species to grow, they have been trying to determine at what age they should be before they are placed in the hills, having tried one- to three-year-old seedlings, and two- to three-year-old transplants. This has been decided in favor of the transplants, as they will give an eighty-five per cent stand at the end of summer, while seedlings do not give more than fifty per cent. at best. This, of course, is a little more expensive, but the increased expense is more than offset by the better condition of the plants and the faster growing qualities.

In placing the trees in the hills, they have tried three methods: first, having two men and a boy, the men to make a "V"-shaped trench with spades and the boy to carry the seedlings and hand them to the men; second, planting in furrows; and, third, the square hole method. The first method is the fastest and cheapest, as two men and a boy could plant four thousand trees a day and, owing to the small wages of the boy, they could be placed in the ground much cheaper, but as the roots were jammed together the difficulty they had in obtaining water during dry seasons was very great, and the loss heavy. The second method of planting in furrows was more expensive, and did not show any great advantages. The third method, the one now in use, whereas it is more expensive, gives the best stand, owing to spreading of the roots by the planter before placing in the ground, giving the plant every chance at the small amount of moisture in the soil.

In the five years they have been working in this region, they have planted on the north and west slopes of the hills, covering an area of about three square miles, with an eighty-five per cent. stand of jack and bull pines that have a good start and, barring fires, will some day be of great value to this section.

The one great enemy that is constantly threatening this country is fire, and to reduce as much as possible this danger they keep three fire guards plowed around the plantation about two miles apart, and by keeping constant watch during dry seasons have kept the fire out, although it has threatened several times.

During the months of April and May there are employed on the reserve from forty to sixty men, the greater part settlers from the neighborhood, who derive a benefit from the knowledge they obtain in the handling of trees as well as the income they receive. This knowledge has inspired a great many to plant trees on their own homesteads, which will in time be of great value to this treeless region. Here-

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tofore the general impression had been that trees would not grow in this country, and nobody ever gave it a second thought to try; so naturally when the government started the present movement, it was for the most part laughed at, as the first impression was that of graft or a foolhardy move. But this impression has died down, as most people found that trees would thrive there with the proper care, and when they saw the Forest Service going into this movement with an earnest determination the feeling changed, and it is hard now to find anybody who is against it.

There has been some unfavorable comment on the species that they are planting to such a large extent, that of jack pine, this being especially true of the people coming from the northern pine regions, where jack pine is considered a forest weed. This, of course, is true, but the one main thing to strive for is a forest cover, and the jack pine will, owing to its rapid growth, be the first to accomplish this. Therefore in the long run it will make it possible to establish a tree of more commercial value.

Taken as a whole, I cannot see why trees should not do well there, as the weather and soil conditions do not differ very much from the northern part of this state. The rain is not quite as heavy, only averaging about twenty-eight inches, while in this state it will average about thirty inches. The climate is about the same as we have here, their summers getting slightly warmer than we have, while their winters are somewhat milder—they have snow and cold weather the greater part of four months. Why there never has been a natural tree growth on these hills is still an open question, with no one rule that will apply to the whole prairie region, but by the help of man there certainly can be one started, which will improve this barren sand hill region and in time be of some value to this country.

Essentials in Handling Garden Soils.—The real secret of tillage lies in the depth that the soil body is stirred. Shallow spading or plowing will not do the stunt. You want to have a deep body of soil, ten to fifteen inches; and this must be so well worked that no clods will be found anywhere. Particularly not down below, because clods resting there, although covered up, will interfere with air and water circulation and with the spread of the roots. A strict observance of these facts will aid in securing quick growth and a heavy yield.

The soil all the way down should be fine, mellow and yet compact. It should be healthy, rich looking and in good heart. This condition is obtained when lime has been added to sweeten the soil and to keep it sweet, when vegetable and stable manure are liberally applied to loosen and liven up, and when fertilizers are injected to stimulate growth and to keep the soil abundantly supplied with immediately-available plant food.

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How to Raise More Fruit and Less Wood.

H. A. HUSTON, CHICAGO, ILL.

The production of fruit is quite a distinct process from the production of the tree that is to bear it. Most of the directions which we find for orchard work are really methods of producing trees and would be quite as applicable to forestry as to orcharding. They produce trees but delay fruiting. Every grain farmer knows that excess of manure produces too much straw in proportion to the grain, and that the nitrogen in the manure is the cause of this. The same thing happens in most orchard work, altho the reason is not always quite so apparent. Clean culture with its frequent cultivations, mulching and turning under of cover crops, all tend to make nitrogen available more rapidly and continuously to the tree and, hence, to produce a rank growth of wood that ripens late and immature fruit buds that will not withstand the winter. Such trees come into bearing late. When the owner wishes to hasten the fruiting he is too often told that manure is the best fertilizer for trees and proceeds to add it and with it more of the very material the excess of which has caused the trouble which he is seeking to correct. Instead of causing the tree to set fruit, he only secures a more rank growth of wood and foliage and a correspondingly greater liability to fungous diseases. Were it not that nature carries much of this additional nitrogen away in the drainage water, the effect on the trees would be even worse. Much of the nitrogen supplied in the manure applied on orchards that are already making sufficient wood growth is a dead loss and would have been used to far better advantage on some other crop.

In old times the grain grower often put salt on the rich bottom lands to stunt the growth of the wheat straw and prevent lodging. Today we do better. We balance the nitrogen by the other plant foods and use the valuable nitrogen instead of stunting the plant so that it cannot use it.

Two Stages in Orchard Work.—In the orchard there are two distinct periods: one the production of the tree, when the usual cultural methods will utilize the soil's store of plant food to good advantage and develop the tree as fast as it should grow. But the production of fruit introduces another phase of the tree's existence when the food requirements are quite different.

An acre of apple trees thirty years old in full bearing uses (Bulletin 265 Geneva, N. Y. Experiment Station) the following amounts of plant food each year:

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	Nitrogen	Phos. acid	Potash	Lime	Magnesia
Fruit	20 lbs.	9 lbs.	44 lbs.	5 lbs.	6 lbs.
Leaves and new wood.	31 lbs.	5 lbs.	11 lbs.	52 lbs.	17 lbs.

EXPERIMENT ON PEARS, KIEFFER & DUCHESS ALTERNATING, BY H. H. SWAIM, SOUTH BEND, INDIANA, 1907.

DUCHESS. PICTURES SHOW YIELD FROM ONE-FIFTH ACRE.
Right—No fertilizer; yield 2½ bu. per acre.
Left—Fertilized with 600 lbs. acid phosphate and 150 lbs. blood; yield 5 bu. per acre.
Center—Fertilized with 210 lbs. sulphate potash, 600 lbs. acid phosphate and 150 lbs blood; yield 40 bu. per acre.

KEIFFERS. PICTURES SHOW YIELD FROM ONE-TWENTIETH ACRE.
Right—No fertilizer; yield 1907, 59 bu.; 1908, 75 bu. per acre.
Left—Fertilized with 600 lbs. acid phosphate and 150 pounds blood per acre; yield 1907, 86 bu.; 1908, 150 bu. per acre.
Center—Fertilized with 210 lbs. sulfate potash, 600 lbs. acid phosphate and 150 lbs. blood per acre; yield 1907, 206 bu.; 1908, 246 bu. per acre.

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It will be seen that the fruit makes much heavier demands than the foliage and the wood, and that the proportions of the materials in these are quite different.

Moreover, while producing this fruit the tree must be making good strong fruit buds for the future crop. If there is not enough plant food of each kind available at the right time then the fruit and foliage use what there is at the expense of the buds, and the next season is an off year from such trees.

To Hasten the Bearing.—Young orchards which are making a very vigorous growth generally come into bearing later than the owner wishes them to. To hasten the bearing period one should begin to balance the ration about two years before one aims to bring the trees into bearing. To do this apply in the spring, or just before the last cultivation in the summer, 250 pounds per acre of fourteen per cent acid phosphate and fifty pounds per acre of muriate of potash. Do not put any of this material within two feet of the trunk of the trees. When the trees are in full bearing, especially on light soils, the amount of muriate of potash should be 100 pounds per acre. On most orchard lands the clover crop, or weeds, clover and grass that grow up when cultivation ceases in the summer, will supply the necessary amount of humus and nitrogen. But if decreasing vigor of the tree and light-colored foliage indicate need of nitrogen the immediate needs of the orchard may be met by the broadcasting of 200 to 300 pounds of nitrate of soda per acre after the trees bloom, and the future needs may be met from a clover or pea crop turned under or from the application of eight to ten tons of manure per acre once in five or six years in case the ground is too much shaded to permit the growing of leguminous crops.

In sections where wood is inclined to mature rather late, it is better to feed the trees with nitrogen only during the early part of the growing season. Where nitrate of soda is used the nitrogen is immediately available and is used at once; the same is true of blood, good grades of tankage and ammonia salts. Such compounds as horn shavings, leather scraps, wool waste and manure continue to yield nitrogen gradually throughout the season and hence tend to delay ripening of both wood and fruit. This may be overcome to some extent by stopping cultivation early in July and letting volunteer growth use up the nitrogen that becomes available during the late summer.

Profits, Not Necessity, the Guide.—It is quite true that there are many young orchards that have come into bearing reasonably early

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and have yielded fair crops every other year and in some cases every year for eight or ten years. Such cases are often cited to prove that rational feeding of the orchard is not necessary. One of America's best-known apple growers had just such an orchard and firmly believed that a balanced ration was unnecessary. After producing a series

Pear experiment by H. H. Swaim.
Kieffer tree without fertilizers; just before harvest; yield 1 2-5 bushels per tree.

of profitable crops he found first the size and next the number of fruits falling off, and two bad years of this sort started him on an investigation to find out, not whether balanced rations for the orchard were necessary but whether they were profitable. And this is the sum of the whole matter. Each one of you is, of course, privileged to use his orchard for a wood lot or a shade park if you wish, but

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if you seek to get the most profit from the orchard consistent with maintaining its productiveness, then the orchard must be furnished with

The right things, in
The right forms, in
The right amounts, in
The right way, at
The right time.

Pear experiment by H. H. Swaim.
Kieffer tree fertilized with acid phosphate and blood; just before harvest; yield per tree, 2 bushels.

The suggestions above have shown these for average conditions; but soil, crop and previous treatment must be considered in making the most profitable use of the materials.

The vigor of the tree and its foliage will serve as a rough idea of the need of more nitrogen. On clay soils the acid phosphate may

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be increased to 300 or 400 pounds per acre for the first few years and reduced to 200 pounds later on. On lighter soils the potash may need to be increased as the orchard advances in years.

Good clay soils often accumulate potash enough for a few crops because the phosphate in such soils is so low as to limit the crop.

Pear experiment by H. H. Swaim.
Kieffer tree fertilized with sulfate of potash, acid phosphate and blood; just before harvest; yield per tree, 5 bushels.

On such soils the use of phosphate for the first few years seems to be the only thing that is profitable. But potash is being removed faster than it is becoming available, and the gypsum (land plaster), that is a necessary part of the acid phosphate, releases more potash from the soil, and so the exhaustion of potash proceeds almost unnoticed. If the soil's supply of potash capable of being released in

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this way was any considerable fraction of the total amount of potash in most clay soils, then this indirect method of securing it could be continued. But only a very small fraction of the total potash of the soil can be made available by such means, and when this small fraction has been used there remains only the potash in the most resistant of the soil minerals, such as feldspar, which cannot by any known economical means be rendered available fast enough to furnish sufficient food for the orchard's needs.

On lighter soils and on black lands the benefits of potash salts alone are often even more conspicuous than those of phosphates on clay. Real limestone lands often contain a great store of phosphate that becomes available fast enough to provide the phosphate supply for the full life of the orchard; but on sandy and on black lands, even where potash at first seems to be the only profitable material, the condition of the orchard should be carefully watched and a trial row treated with phosphate as soon as any indication of trouble appears.

Off years are due quite as much to starvation as to climate. We have learned how to combat the fungous and insect enemies and how to conserve the moisture. Rational feeding of the orchard will bring more constant bearing, healthier trees, much longer bearing period and higher quality and greater quantity of fruit at a cost that is quite insignificant compared with the return received. Try it!

SPRING-SET TREES, if the season is at all normal, start growth at once and during the first six months make rapid progress. They are thrifty by the time fall arrives and are able to withstand attacks of insect pests; the wood which developed during the summer matures fully, and the entire tree has become fully accustomed to the environment. Most tree growers also state that there are almost no objections to spring planting except that possibly at times the work comes when other things on the farm or about the orchard demand attention. This is only a slight objection, as the setting should be done just as soon as the frost is out of the ground and before the fields are in condition for cultivaton.

THE WHIP, OR TONGUE, GRAFT.—This form is commonly used where the stock, or branch, and scion are of about the same size. A small cleft or split is made in both stock and scion about midway on the slope. These are then inserted one into the other, which will hold the scion in its place. Waxed cloth is commonly used to wrap around the stock and scion to hold the latter in place until it has become firmly united. The tongue, or whip, graft is best to use by any one who wishes to propagate his own apple trees. The stocks are dug in the fall and may be grafted any time during the winter. The stock is cut off and the scion inserted in the root, then tied with strong waxed paper, raffia or thread, and melted wax applied with a brush. Grafted stocks are planted deep enough for the soil to cover the union.

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Strawberries—A Question Exercise.

LED BY GEO. J. KELLOGG, STRAWBERRY SPECIALIST, LAKE MILLS, WIS.

Mr. Kellogg: I want to make this exercise worth fifty cents a minute. I don't want to make any long talk, but if anybody has anything to say I want him to say it. I suppose you want to find out any new experience with strawberries. One of our best growers from Wisconsin is here, and he gave you a very fine paper yesterday. Now, I am going to call on Mr. Richardson to tell you something about new varieties.

Mr. C. L. Richardson (Wis.): I have nothing to report of the past year except that I have ten new varieties. Of those I have tried, I think the Good Luck is the best. From the type of plant I am almost certain it is going to be a large, fine fruit, and it is going to be a productive vine. It is a well balanced plant and has a thoroughly good root system.

Second. The Red Bird, which I have put in this last year, from Louisiana, is a small plant but vigorous; it is of the Warfield type, of about the Warfield size, but with a longer root system and a good runner.

The Madison I have twenty-five plants of, but it has shown an inability to change its environment.

The Klondike is along the Haviland type. It shows a preponderance of ability to stand outside conditions.

The Abingdon is a new one of the Bubach type, a free runner and appears to be very promising.

The Cardinal many of you may be familiar with. It is slightly lighter in color than most of us would prefer.

That is all I have to report. If I were to make a choice I would say the Good Luck was the best. It comes from Maryland.

Mr. Kellogg: Has anybody had experience with the Pan-American? This is a new variety that was sent out at the time of the Buffalo exposition. Mr. Van Deman told me last year it was the best all round autumn bearer he knew of. The old Hautboy bears one berry about every rod and is not satisfactory. The Pan-American bears wonderfully well, but the Autumn is a much freer grower and a better runner. I set out the two varieties last spring in order to compare them. I thought I would let them bear themselves to death, and so I let them go right at it. The Autumn sent up a dozen fruit stalks with 118 fine specimens on the runners grown this year. The other variety had fifty-eight berries on one plant.

Mr. C. S. Harrison: Do they send out runners freely?

Mr. Kellogg: The Autumn sends out runners freely, but the Pan-American scarcely sends out one runner to a plant, if you let it fruit. The Autumn is profuse in its showing, but the Pan-American is shy. Both will produce well. Autumn, I think, will fertilize itself so as to produce a good crop, although it is rated as a pistillate.

Mr. C. S. Harrison: I think that is a good quality if you want to sell them.

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Mr. Kellogg: I have found it a good plant, and I have quite an inquiry for them.

Mr. C. S. Harrison: Is it not better to plant the two on account of the Pan-American being full of pollen?

Mr. Kellogg: That is what they told me.

Mr. Haralson: I had the same varieties blossoming and bearing fruit last summer that were planted last spring.

Mr. C. L. Richardson (Wis.): Cutting the fruit off the Pan-American will produce more runners.

Mr. Kellogg: Pan-American produces few runners if allowed to fruit.

Mr. Stifter: Does the Autumn fertilize itself?

Mr. Kellogg: I think it will fertilize itself, for the whole row was in bloom when the others were but few in bloom, but it has shown plenty of fruit, and the fruit was perfect.

Mr. A. B. Coleman: Will it bear next year?

Mr. Kellogg: This is my first experience, but I expect it will bear right along winter and summer. (Laughter.)

The question has been asked as to its size. We cannot expect large fruit with 118 on a plant. The best of them measured over three inches in circumference. They are good size, but out of one row you could not expect to tell just what it would amount to. The plant is good. The fruit gets red fairly well and has a pretty good color.

Now I have a new experience: A man told me this year he had more trouble with the white grub than anything else, and the ground was cultivated two years. I was surprised at that. He said the white grub was doing him all sorts of damage. He is growing strawberries on a large scale, ten to fifteen acres. I always supposed the white grub would not bother on land that had been cultivated two years.

Mr. Wedge: I have had trouble with the white grub in evergreens repeatedly.

Mr. Kellogg: Probably it was the second and third year.

Mr. C. S. Harrison: I think we have been abusing the best friend we ever had, and that is the little mole.

Mr. Kellogg: I thought it was the skunk.

Mr. Harrison: No, sir, it is the mole. I consider a mole worth five dollars. I am raising phlox that I consider worth fifty to one hundred dollars apiece, and the grubs will take a row from one end to the other. One day I saw a mole in that ground, and I proposed to let him alone and see for what purpose he came. In the fall I could not find a single grub. The moles had been at work, and there was not a single grub to be found, although they had been plenty. The mole never touches vegetables and never goes where it is not needed. There has been evidence of his usefulness, and it has been seen that he is doing his business to the best of his ability. I think this society should pass very stringent resolutions protesting against the use of mole traps and provide a fine or imprisonment for any one killing a mole.

Mr. C. L. Richardson (Wis.): I would like to ask the general question how the strawberry beds are going to come out next spring.

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I will venture the assertion that with the severe drouth of this fall we are going to start out with a poor chance for a good crop in northern Wisconsin next year. I would like to hear from others in that regard.

Mr. Kellogg: How much rain have you had this fall?

Mr. Richardson: Up to the middle of October we had only three or four light rainfalls, but since then we have had enough to plow.

Mr. Kellogg: We have had two or two and a half inches in Jefferson county, and our soil is in good condition this fall.

Mr. C. S. Harrison: It is the late rain that produces root growth; so there is no danger.

GEO. J. KELLOGG,
Lake Mills, Wis.

Mr. Kellogg: I don't think it was the lack of root growth, although our plants are not as extensive as we would like, but I think we go into winter quarters in good shape.

Mr. F. J. Cowles: Speaking of the white grub, I had a similar experience as some of the others, the first I ever had of that kind. I put some strawberries on a piece of ground where I had had apple trees in the nursery row, and this year the grubs took most of the strawberry plants.

Mr. Kellogg: That apple ground had the grub in it. You cannot get rid of the grub at least for two years.

Mr. Cowles: This last spring it had apple trees in. I dug the trees last spring, plowed it and planted strawberries on the ground.

Mr. Kellogg: I think you got the grubs in it in connection with the roots of the trees or perhaps with the mulching.

Mr. Cowles: There was a piece of sod ground just adjoining.

Mr. Kellogg: There may be where your grub came from. He gets up nights and hunts for strawberries.

Prof. Thos. Shaw: I am glad the question in regard to the white grub has been raised, and I hope some one will give us some light on the subject and show us how to combat it. I do not grow many strawberries, but I lost a great many where I did grow them from the white grub. Can any one suggest the proper remedy to get rid of that sort of thing? It was on sod land where my strawberry plants were set. It was a piece of ground very carefully worked

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over the previous year and not a single grub on it, and yet the grubs took most of my crop.

Mr. Kellogg: What was the crop on the ground before that?

Prof. Shaw: Potatoes.

Mr. Kellogg: It needs potatoes two years.

Mr. C. S. Harrison: It takes time to thoroughly pulverize a piece of ground and get it thoroughly free from grubs.

Mr. J. O. Weld: I think the brother would have a job to get rid of all his grubs. I dug stones out of my field, and I found grubs two feet down.

Mr. C. S. Harrison: That was late in the season.

Mr. Weld: That was about two weeks ago.

Mr. Harrison: You want to take them early. They knew you were coming, so they hid.

Mr. Seth Kenney: What does the grub develop into?

Mr. Kellogg: The June bug or May beetle.

Mr. C. L. Richardson: What do you do for the leaf roller?

Mr. Kellogg: I try not to have them. I think by careful spraying we can get rid of them. I prefer the bordeaux mixture, but you can use arsenic or paris green the same as for potatoes. Burn over the old beds; don't keep any old beds.

Prof. Shaw: Supposing I turn down clover sod one year old; will there be any grubs in that?

Mr. Kellogg: No, sir. You take clover sod one year old, and there is no danger of the white grub. Take any kind of sod two or three years old, and you will find them. You will have no trouble where you give your land good, clean cultivation for two years before planting to strawberries. Is that not correct, Mr. Richardson?

Mr. C. L. Richardson: My experience is I never had any trouble. As to planting on sod six or seven years old, I have never had any experience.

Mr. C. S. Harrison: If you want to get rid of the white grub turn your hogs into the field; they will hunt for grubs until they get them all out.

Mr. Cowles: Has any one been bothered with them where they plowed in the fall?

Mr. Kellogg: Fall plowing will help eradicate them, but we would not want to put strawberries on June grass sod any time.

Mr. Wedge: I want to say that you cannot depend upon freedom from the white grub with clean cultivation. I have had no kind of grub, I know of, for a period of years. I know in the case of young evergreens they have sometimes eaten a thousand dollars worth in a patch the size of this room.

Mr. Kellogg: They must have got in that seed bed the first year and done the damage the second and third years in the evergreens.

Mr. Wedge: I know that the ground was thoroughly cultivated for years, and still they would come in there and take them. I think the suggestion of Mr. Harrison is a very practical one; I had never thought of it before. I believe turning the hogs in a patch that is

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infested would practically rid it of white grubs in a year. There is this about the white grub: while I had them as a terrible plague some eight or ten years ago, for a period of three or four years since I have scarcely seen one. They seem to be periodical in their attacks.

Mr. Elliot: Has any one used kerosene?

Mr. Kellogg: I have not, have you?

Mr. Elliot: No, but I saw it recommended very highly a year or two ago.

Mr. Kellogg: The grub does his damage the last year. It takes three years to mature, and the last year is when he does the mischief. You can prove anything in a horticultural meeting. You can prove that black is white. It will not do to plant on June sod.

I know nothing better than the Senator Dunlap for one variety: The Dunlap seems to do better than any one variety that I know of. A great many people ask me which is the best variety of strawberries to grow, and I always tell them I have not lived long enough yet to find out.

Mr. C. S. Harrison: In attending different horticultural society meetings in the West, I find the Dunlap takes the lead. I was very much surprised this year. We had a late frost, as you know, and I found the Hansen No. 2 to be in the lead, but the Senator Dunlap beat it two to one. Strawberries are tricky, and my experience is that for the average farmer who cannot afford to give his attention to a number of different varieties, if he grows this Hansen he will do very well. The berries are not large, but my experience is that they are pretty good.

Mr. Kellogg: They are small and worthless except under trying circumstances. For a lazy man they are a mighty good thing. (Laughter.) They are not worth anything for the practical farmer. It will take about two hundred and seventy of them to make a quart. (Laughter.)

Mr. Coleman: I would like to ask a question as to the feasibility of growing strawberries year after year on the same ground without any intervening crop.

Mr. Kellogg: That is almost an impossibility. I think that is impractical even if you keep the ground fine and in good condition. You get the white grub in after two years, and it is almost an impossibility to grow strawberries successfully under those conditions. I have grown consecutive crops for four years, but the last two years they were almost worthless compared with the first two.

Mr. Coleman: I never had any trouble with the white grub. I have sandy soil, and I have one piece of ground upon which I have grown three crops of strawberries in succession. I have planted it again to strawberries.

Prof. Shaw: As a part of rotation it should not be attempted. After a strawberry crop has been grown, some other crop that will put humus in the soil should be grown before strawberries are again planted on the same piece of ground.

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SECRETARY'S CORNER

A New Rugosa Hybrid.—Under date of August 7th, Mr. Charles Haralson, superintendent of the Fruit-Breeding Farm, writes "I have two rosa rugosa hybrids in bloom. The roses are pinkish red, quite double and a little larger than Gen. Jacqueminot, with rosa rugosa foliage and habit."

A Japanese Plum.—Mr. A. W. Keays, of Elk River, sent to this office late in July several samples of a good sized red plum which he says is a Japanse hybrid, having borne with him for four years, ripening July 15th. It is a fruit of firm flesh, freestone, peeling easily and keeping remarkably well, some specimens sent to the office holding up in fairly good condition in this warm office for several days.

The Superb Apple.—"This apple is proving to be an annual bearer and a very good winter apple when topworked on the Hibernal," so says Mr. W. J. Tingley, of Forest Lake. This variety, a seedling of the Duchess, I believe, originated at Winnebago, upwards of thirty years ago and has proved itself a very abundant bearer there at least, and an apple of splendid appearance and fair quality. We are glad to hear of its doing so well in this region.

Delegate to the American Pomological Society.—This national organization is to meet this year at St. Catherines, Ontario, Canada, Sept. 14-15-16. Mr. A. Brackett, of Excelsior, it to be in attendance as the representative of this society, and we may expect from him an interesting report of the meeting. As the meeting is held in a locality where much fine fruit is grown, there will undoubtedly be a very large fruit exhibit.

A Visitor from Maine.—Late in July there walked into this office Mr. D. H. Knowlton, of Farmington, Maine, for many years secretary of the Maine Pomological Society, though he is not at present filling that office, having turned it over to a successor. We were pleased to hear from Mr. Knowlton of the revival of the orchard industry in his state and to know of the growing interest along all horticultural lines. Mr. Knowlton is a college classmate of one of the working members of the Minnesota society, Mr. F. H. Boardman.

To Kill Dandelions.—"Better Fruit" says to destroy young dandelion plants by spraying, dissolve two pounds of sulphate of iron in a gallon of water, stirring with a stick to hasten solution, and apply with a hand sprayer. Use one gallon of the solution to one square rod of grass plot. If the application is not completely successful, spray a second time. Repeated sprayings will result in the eradication of the dandelion. The grass and clover will be blackened and appear killed, but this need cause no alarm. They are not mortally injured and in a few days recover and grow with increased vigor.

Premiums for the Winter Meeting.—The matter of the premium list for the coming winter meeting has been under consideration, and it has been decided to make no radical changes from the list offered last year. Prospective exhibitors are requested to consult that list, which will be found on page 477 of the 1908 report, and save fruit for the exhibit accordingly. Anything that will not keep well in one's own cellar can be sent by express prepaid to Booth's Cold Storage, Minneapolis, marked for "winter meeting," where it will be cared for and delivered at the place of meeting. Tags specially printed for this use can be had of Secretary Latham in any quantity desired. We hope for a large and fine exhibit of fruit at the meeting. There is plenty of good fruit in the state, and the exhibition this year ought to be second to none that the society has ever made.

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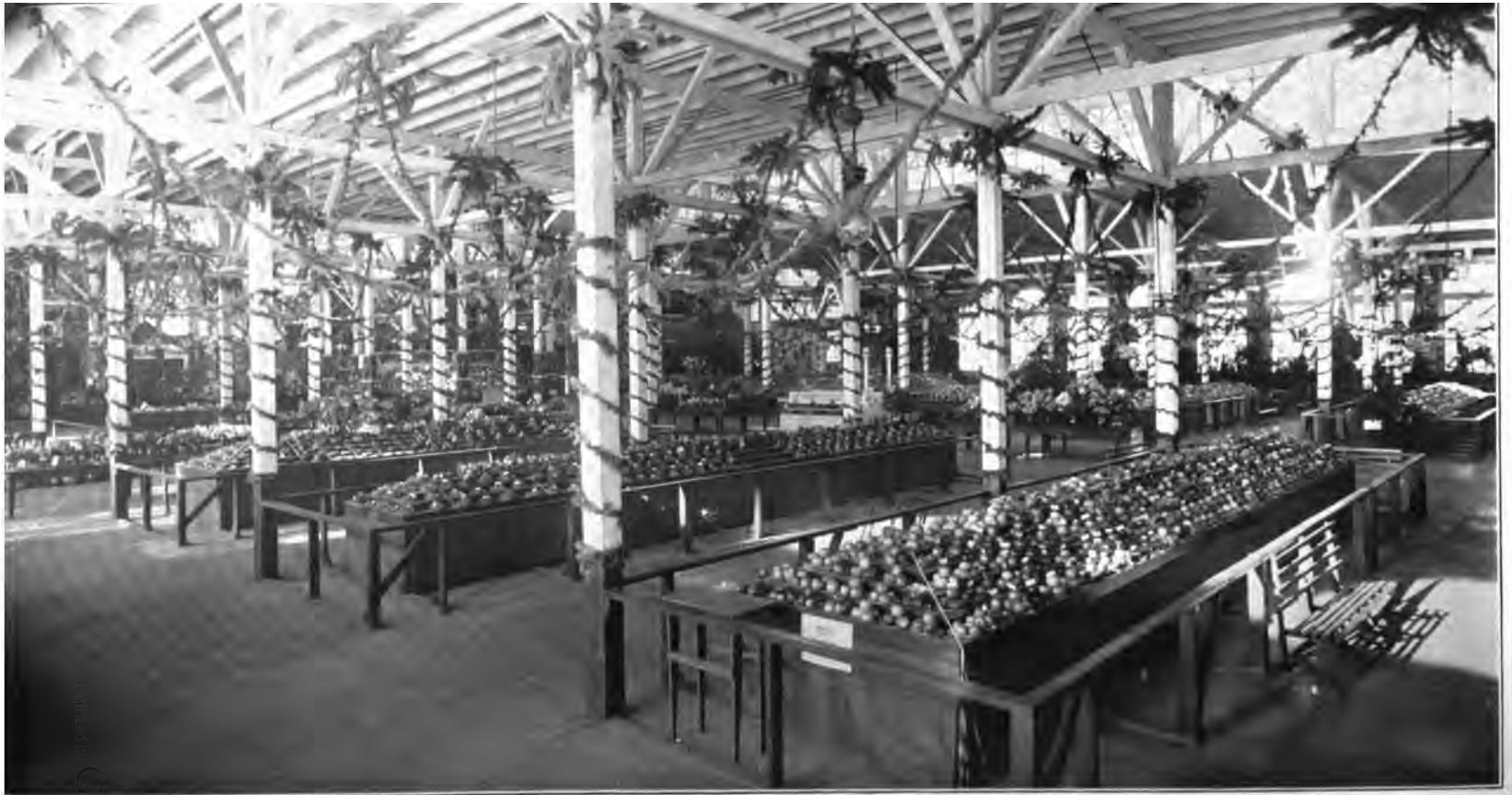

General view of Horticultural Hall, Minnesota State Fair, 1909, looking across hall from the northeast corner.

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THE MINNESOTA HORTICULTURIST

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Distributing Apple Trees via the Woman's Club.

MRS. EDGAR H. LOYHED, FARIBAULT

Arbor Day has been the one day of all the school year when women have taken part in the work. They have given plants and trees and have gone personally with all varieties of trees, shrubs and plants with the idea of planting everything on Arbor Day. The educational committee of our woman's club last year thought that possibly Arbor Day was the one point where they might reach the children of the state. After correspondence with the secretary and president of the horticultural society, I wrote, as chairman of this committee, to a number of nurserymen in the state asking at what price they would deliver apple trees to the school children of the state. I concluded that apple trees might be the very best thing to offer children. An ordinary tree does not appeal to children. Strange to say, it is one thing we do not teach in school. Many children do not know an oak from an elm. I had some trouble in deciding what to do. Different nurserymen wrote such kind letters to me and set such different prices on the same sized apple tree that it was almost impossible to make a choice. The price finally decided on was seven cents apiece, but as this did not pay the transportation charges I wrote and asked the nurserymen if one cent would pay the freight on each tree. We had a lot of correspondence to do and had to get out some circulars so that the expense of the matter was increased. We finally made a price of nine cents, seven to go to the nurseryman, and the balance for the freight, correspondence, postage and the circulars we got out. I was very late in getting the trees started. It took me a great deal longer to get through the correspondence than I thought. It was the first of March before I sent out my circulars.

There are 172 women's clubs in Minnesota, representing a membership of over eight thousand. The large cities were unable to take up the matter at all. Children in Minneapolis schools cannot be asked for money for any purpose. St. Paul had already done this selling

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of apple trees to a certain extent. It was the smaller towns and cities that took the matter up. Most of them were very much interested, but some of the club women did not have time in the two or three weeks left to them to go into the schools. The plan was this: The club women were to go into the schools and explain the idea to the children and have the money sent to me, and I in turn would turn the orders over to the nearest nurseries or nurserymen in that locality. I ordered 4,120 apple trees. In the circular I first sent out I also suggested that if there was a nurseryman in their towns who could furnish the trees at the same price it would be better to get the trees of him. Some did this. St. Cloud bought almost a thousand of their local nurserymen. These trees were divided up among a number of nurserymen.

There was more interest taken in the northern part of the state than in the southern. In the northern part of the state it is almost a revelation to them when you tell them they can raise an apple. The children at Duluth were almost more interested than in any other part of the state. I have not heard how the apples got through the summer, but I know there were over 6,000 apple trees sold through this scheme. It was a very pleasant work to us. I had the pleasure of celebrating Arbor Day in two of the towns. In Duluth the superintendent of schools had a special day for Arbor Day, the regularly appointed day being a little too early for that locality. So they designated a special day, and a great deal was made of apple tree culture.

Now the question that confronts us is whether it is worth while to go on and furnish the children with apple trees; whether it would be worth while to add plum trees or something else to this idea. I should be very happy to hear any suggestion any one might wish to make. If we do it again we want to begin earlier than we did this year, so that we may give every child in the state the benefit of this offer. It seems to me the children have been encouraged to plant apple trees, and I would be glad to hear from any one as to whether it would seem to be a practical thing to continue. (Applause.)

The President: Is there any one here who would like to offer a suggestion, or any one who knows the outcome of last spring's experiment?

Mr. Geo. J. Kellogg (Wis.): I don't know whether your society or state has ever done anything in the distribution of strawberries or not. In Wisconsin we made a big distribution of strawberry plants a good many years ago. That is one of the most easy, the most practical and perhaps the quickest to give returns, and generally the most satisfactory to children, of anything that can be grown. To live in anticipation of growing apples in five to ten years requires a great

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deal of patience on the part of the child to make a success of it. It seems to me the plum would be better and would give quicker returns, but the price would not be so cheap. Raspberries would be cheaper, and they would get returns a year from planting. I have distributed raspberries and blackberries in our state, but I think strawberries would be the best thing to take hold of among the children.

Dr. H. M. Speachly (Man.): The address to which we have been treated this afternoon ought certainly to encourage us in this work, and what the lady said she said in a most interesting fashion. I want to congratulate her upon the way in which she put the matter before us; I admire the way in which the whole scheme was handled by the women who had the matter in charge. In our society we have got the children interested in hardy shrubs. We got them interested in such beautiful things as the Tartarian honeysuckle, the lilac, the hydrangea paniculata and things of that kind. Those things bring returns quicker than the apple and are very delightful wherever they are grown.

The President: We would like to hear something from Prof. Green on this subject.

Prof. S. B. Green: I have done a little of this kind of work in times past. We distributed trees in the St. Paul schools. I think we distributed apple and plum trees for three years; I have forgotten how many we distributed, but they went off very readily. Of course, there is some work to be done. We had a little margin for the labor, and I had some young fellows to put at it; so I did not have to do much myself. I had the children at the experiment station, and I remember the day the children went home with the apple trees. The ladies got out a little circular in which they advised them how to handle the apple trees. There was considerable interest aroused, so much so that Superintendent Nussbaumer set apart a part of the park where those who had no other place could plant their trees, and the park people set out their apple trees, for which a charge of ten cents was made. Some of those trees will bear apples, and even one apple will give the greatest satisfaction to a child.

In St. Anthony park we have a schoolhouse where for a number of years I have distributed things to the children. We had an improvement association there, of which I was president for a number of years. If you want to attract the attention of the grown people there is no better way than to interest the young. If you want to lead the old cow along there is nothing like having her calf in the wagon (laughter), and if you get the children to plant apple trees and talk about apple trees, talk about the improvement association giving away apple trees, there is no surer way of attracting attention. While connected with the improvement association I started the scheme of giving out among the children some of these things they would see in the park. I would give them some sort of a plant, and they would go home happy as they could be, and they would rouse up the old fossil and get him to plant that beautiful plant. One year I gave away some pieplant, and they were just as pleased as they could be with it. The next year they had enough to make some pies. I gave

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away currant bushes, and sometimes I gave them an ornamental plant, such as spirea or oleagnus. We have done this for ten years. Then we would get together to report. I would give the children a little talk and then the children would get up on the platform and make a report of the trees they had planted, how many had lived, and sometimes one of them reports that she has made a glass of jelly from the currants off her currant bush given her by the improvement association. Another reports that she has made so many pies out of the pie plant she received; somebody else had an apple—and so they go and make their reports of the various things they planted. Somebody has an oleagnus tree in flower that year, and they make a little report of it for Arbor Day.

We decided a year ago that we would not do that any longer. The improvement society thought it had been going on so long they concluded it would be better not to continue the practice. We had this practice so firmly fixed in the children that we could not drop it, and I don't know that we can ever quit. They look forward to that kind of Arbor Day celebration. The children come up to the experiment station, and there we have the facilities for distributing. The great thing is to get the children together to make their report about the trees, shrubs and vines, and we have a good time together, and forty or fifty of the fathers and mothers come, and they have a good time with the children.

Mr. Kellogg: The thought came to me that it would be a good idea to have a variety to offer them, not only apple trees, but get them to plant the strawberry or other fruit plants, or shrubbery, as the gentleman suggested, but I would not suggest the hydrangea, I would put in the spirea. Give them a choice of a number of things—not only apple trees, but I would suggest a variety of offers to the children.

Col. C. W. Gurney (S. D.): While this line of action is very good, it seems to me it is susceptible of some criticism, and one thing that suggests itself to me is that I understand the children buy these things and pay cost price. When the trees get home to the home plantation they are planted, but they do not belong to the children any more, they belong to the "old man." (Laughter.) I would suggest that the auxiliary could expend its energies in a better way with more benefit to public life and with great satisfaction to themselves and to the people at large by expending its efforts in the way of ornamenting our common school grounds. How it is here in Minnesota I do not know, because I have not traveled much about your state in an open conveyance, but in South Dakota I can assure you our schoolhouse grounds are the most cheerless and forlorn looking places of an acre or half acre you could find anywhere. Just the schoolhouse sitting on the face of the prairie, with no tree, flower or shrub anywhere, and you can imagine what the effect must be on a child that has had good home surroundings, with trees and flowers about the home and good parents. What is the atmosphere of the school compared with that of the home? This is a matter we ought

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to give important consideration. The atmosphere of the school at least should be as good as the home and even better. Make it as good as possible. Let the mind of the child go back in his maturer years not only to his home but to his school home as one of the pleasantest places and his stay there one of the most enjoyable epochs in his or her life.

Going into details as little as may be practicable, I would suggest that more be made in the way of impressing the children with the importance of Arbor Day in such parts of the state where the season is favorable—and I wish to say right here that Arbor Day comes too early in the central and northern part of the state, and there should be another day designated for the part of the state north of this. Have a little picnic at the schoolhouse on that day. Bring out the lemonade, the cakes and other dainties that attract the children — and the older people too — and have some of your patriotic citizens and statesmen come out and make some addresses to the older children and the parents, addresses along the line that will interest the people, and have a real good social time, and then during the day plant those trees. It is not necessary that the women should dig the holes and plant the trees; they can superintend the work, or they can say to the men to dig a hole here and dig a hole there, and they can see that the trees are planted. The school will not only have an enjoyable time, but you will lay the foundation for something that you will later be proud of, and when strangers come through your town or your part of the country they will notice your schoolhouses and say, "The people who have such schoolhouses must be an enterprising and progressive class of people," and the chaffeur will say, "Yes, this is Minnesota." (Applause.)

Mrs. Loyhed: I think the country schoolhouses of Minnesota have their grounds so full of trees, shrubs and flowers now that there is little room to plant anything else. For years where I live trees have been planted on Arbor Day. There is no room for basketball, football or anything else, there are no grounds left for anything else.

Col. Gurney: I stand corrected. I was simply speaking of the average condition found on school grounds, and I am glad to note that the condition of things in Minnesota is different.

Mr. S. P. Crosby: I am sorry the gentleman apologized for Minnesota school grounds, for there is nothing so desolate and forsaken looking as the majority of school grounds in the central northern part of the state. The school grounds are utterly neglected. I know whereof I speak because I am familiar with the conditions of things as they exist. The ground is in good condition and will raise any kind of a crop, yet the school grounds are perfectly bare, and it is a matter of perfect indifference to nine out of ten people.

Judge L. R. Moyer: There is one great trouble in planting trees on a country prairie. School is held in winter and not in summer, and if they do plant trees on Arbor Day there comes a time in summer when weeds grow up around the trees, and the trees will be absolutely neglected in summer time when there is no teacher there to

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take care of them. When we have successful country schools and beautiful schoolhouses and grounds it will be when we have obtained teachers that love the school grounds and who will have a trial station around each schoolhouse. Children will have to be taught these things. We should have competent teachers who understand the teaching of horticulture, and there should be trees and shrubs around every schoolhouse. (Applause.)

Mr. C. G. Patten (Iowa): I know but little about this subject practically, only it occurred to me after listening to the address of the lady that their efforts are to be highly commended. It occurs to me that there is no quicker method of reaching these school grounds than to reach the children of families that attend the school and to educate these children. Besides the giving, the practical giving of these plants and trees to the children, there is another side to this question that seems to me more important, and that is in the way of teaching the children to beautify the home. That point I think cannot be emphasized too strongly, for if you can interest the children in planting at home their strawberry plants, their plum and apple trees and their shrubs and vines, it will interest the fathers and mothers in making their homes attractive, and to my mind that is the feature that makes home sacred to the child; in fact, it attaches the child to the home, and the home is the essential foundation of American civilization. (Applause.)

Mrs. Loyhed: I would like to take just a moment to thank all the nurserymen with whom I corresponded and who did so much to help carry out this idea. I appreciate very much what they did in this direction; it was not only to get the apple trees to the children, but it interested them in horticulture and agriculture. I am a horticultural crank myself in a small way, but I never found my children willing to help me, but when each had an apple tree of his own I found they were much more interested in horticulture than ever before. It was to create a personal interest among the children that the committee tried to carry out in this idea. A boy who has a garden even in a small way must become interested, and I believe horticulture must have as much interest as anything else.

The President: I would like to say a word myself. I was somewhat surprised at the trend the discussion took. While Mrs. Loyhed was simply speaking about the distribution of apple trees, in the discussion there have been other suggestions offered in the way of taking some other kind of trees and plants for distribution, like strawberry plants or ornamental shrubs. It seems to me children are much like older people in one respect, and that is, they like a large interest in the property, and I really think they would take more interest in the growth of an apple tree, that is going to give them some fruit at some time in the future and some returns for their labor and investment, than they would in a shrub or vine or some of the other ornamental things. Perhaps the distribution of strawberry plants would be along the same line, but I hope Mrs. Loyhed will continue with her present plan of distributing free trees.

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Picking and Marketing Apples for the Local Market.

P. H. FRYE, WILLMAR, MINN.

(Kandiyohi County Horticultural Society.)

I do not know whether our secretary intended for me to criticize our local merchants, or whether he wished me to comment upon the methods in which fruit has been brought in and placed upon our local market by the fruit growers of this county, or whether he intended for me to simply bring before the meeting the method that I have pursued in marketing my limited amount of fruit, or whether he wished me to suggest some better methods for the future. Therefore in order to meet the subject half way I shall have to criticize some of the methods of the past and suggest new lines for the future.

You all know that it was only a few years ago, say fifteen or twenty years, or even later, say ten years ago, when it was not the question as to how we should pick and market our fruit as it was whether or not we could raise fruit to any extent in this locality. But time and persistent efforts on the part of a few fruit enthusiasts have settled that question; for there is no longer any doubt but what there can be raised in this county fruits enough to supply our local market from the time strawberries first ripen until apples are all picked and marketed in the fall. Then my subject is, how shall the picking and marketing be done.

I wish to state here that I am only a beginner in marketing fruit, although I have been raising in a limited way fruit in this county for about fifteen years. I never dreamed that I would raise more fruit than my family would use or hardly that, but my endeavors along that line have greatly exceeded my expectations, and I have been obliged to place my surplus fruit upon our local market, and my limited experience along that line leads me to believe that no two varieties of fruits, especially apples, can be picked and marketed in the same manner.

My method of picking and marketing apples is as follows: The first variety of apples I have to market is the Duchess. Now, for cooking or table use the Duchess can be picked and marketed at a greener stage than any other variety of apples grown. I watch my fruit, and when I find I can, by going over the trees, pick from one to two bushels of apples I do so, and place them in paper-lined half or bushel baskets, take them to the store where I trade and tell the storekeeper to sell them for cooking purposes, and that I will stand the loss if any. I also tell him that I have more and will bring them in when

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he wants them. In that way one can work off his Duchess before they get overripe.

My next apple is the Whitney No. 20. Now, the Whitney is my worst or most particular apple to market. You all know the Whitney is looked upon as only an eating apple—and when ripe it is a good eating apple—but once ripe its days of usefulness are soon over. My method with the Whitney is as follows: I watch my trees, and just as soon as the fruit begins to color or turn red I commence to pick, put them into paper-lined baskets, take them to the same store, tell the storekeeper to sell them for sweet pickle apples. The Whitney at that stage is not fit for anything else but to make sweet pickles from, and for that it ranks high. But just as soon as they become ripe, keep your storekeeper well supplied and tell him to sell them for eating apples only.

The Okabena and Hibernal apples can be marketed the same as the Duchess, only they allow you more time as they do not ripen as fast as the Duchess. By picking the largest fruit each time, one has apples to market that show off well in the baskets, and they sell better.

If any one is fortunate enough to have to spare any Peerless or Wealthy apples, I would recommend picking them carefully and packing them in barrels, and there is no question but what they will bring the top prices, as those apples will keep until spring.

Now, as to my criticism of the methods in which apples are placed upon our local market.

First: The Hibernal, Okabena, Peerless and Wealthy apples are picked or rather shaken off the trees too early in the season.

Second: Shaking any apple off bruises the fruit, and when once bruised it soon turns dark.

Third: The fruit is hauled to market in sacks. It should be in paper-lined boxes or barrels. As to our merchants, they take the apples, dump them into hard boxes and barrels, still further bruising the fruit, and in a few days they have a lot of spotted fruit that no one wants.

Now, in conclusion, let me say, if we are able to raise fruit for our local market, or for any market, we should endeavor to take our fruit to that market in the most neat and attractive way that we can. By so doing we not only show that we admire our own product but that we have respect for the merchant into whose hands we place our fruit to be sold.

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Some Suggestions for the Strawberry Grower.

C. L. RICHARDSON, FRUIT GROWER, CHIPPEWA FALLS, WIS.

In considering the situation which confronts the commercial strawberry grower, four points are to be considered: the man, the plant and the environment of each. Not every man is gifted with the qualities which make up the intangible equipment of the successful fruit-grower; not every strawberry-plant will thrive in all sections, on all soils and under all conditions of climate and culture; and, finally, there are many pleces where, from lack of population or of transportation facilities, the business of growing strawberries would be unprofitable. Each particular situation demands its own analysis. Each man, plant, field and market has its own needs and peculiarities. Methods which succeed here may fail elsewhere. Even the results desired are not everywhere the same.

C. L. Richardson, Chippewa Falls, Wis.

The soil is a factor to be considered. Good corn land is usually good strawberry land. Steep hillsides and undrained areas are alike to be avoided. Proper drainage, both for air and water, are desirable to avoid drowning and late spring frosts. Sand hastens and clay retards the time of ripening of the crop. Clay produces the more plants, but sandy loam the better berries, both in color and in flavor. A difference in time of ripening of ten days to two weeks can be obtained by planting early varieties on sandy southern slopes, or by setting late varieties on cold clay, north exposures and mulching heavily. Large fancy varieties are inclined to be poor plant-makers and usually require a rich soil, while most of the early varieties are good plant-makers and prefer sand.

Closely interwoven with the success or failure of a strawberry field is the selection of varieties. As a natural consequence of the ease with which new seedlings can be grown and propagated from runners, almost everything showing any signs of merit has been pre-

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served. There are perhaps a hundred and fifty varieties of general dissemination throughout the United States, and about one thousand, including those of only local distribution. Out of this immense number it is possible to select one or more for almost any conceivable situation. In other words, the selection of varieties is the key to environment.

But the market is overloaded with new varieties of unknown possibilities and old varieties that are known impossibilities. There are new experiments of which we know nothing and old certainties of which we know too much. Almost every nursery catalog has a few of one or the other, at high prices, to catch the unwary. Seventy per cent. of those in existence might well be discarded; the difficulty would be to select the thirty per cent. which should remain.

It is almost impossible to lay down any general suggestions as to the selection of varieties or even the basis on which the selection is to be made. The man, the soil and the market must be considered. Some men are only fit to grow the Michels' Crescent and Wild Wonder —plants capable of surviving neglect or careless culture. Almost every one throughout the Northwest is safe in planting the Dunlap, Warfield, Bederwood and Haverland. Often a most satisfactory plant will not produce a marketable berry. As examples may be cited the unattractive Bismarck, the light colored, long stemmed Cyclone and the unproductive Livingston. Conversely, some of the finest berries grow upon unsatisfactory plants, such as the rust-eaten Hunn and the poorly-running Van Deman and Margaret.

Much depends on the needs of the man and the market. One prominent fruit grower from a neighboring state grows nothing but the Senator Dunlap—twenty-five or thirty acres of them. The crop is moderately early, of short duration, and so gets out of the way of the raspberries, peaches and apples which follow. Shipments are made in carload lots, and the factor of overloading the market need not be considered.

But the grower who depends on a limited local market to dispose of two to ten acres of strawberries may well proceed to the other extreme. He can carry many varieties, beginning with Cameron, Michel, August, Luther, Fairfield and Excelsior, proceeding to the standards of midseason, followed by the Glen Mary, Marie, Challenge, Sample, Lyon and Marshall, and closing with the Uncle Jim, Latest, Midnight and Nettie. Thus he can to some extent guard against a crop failure, distribute his fruit over a long season, dispose of the largest possible crop upon his local market and care for it with

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the smallest crew. He meets his customers face to face and knows them all. Out of that knowledge he has something suited to the tastes and requirements of each. He has fancy berries for particular people and cheap berries for cheap people. He has learned that a light colored berry will sell early in the season for immediate use, but that to supply the canning trade later on nothing but a dark red berry will give satisfaction.

There are many localities, notably in the south and west, where fruit-growers have organized associations and other forms of co-operative marketing. Where that is the case, there is a marked advantage in uniformity of product. Grading is made easy. The shipping agent of the association is enabled to forecast approximately the amount and quality of the crop he is to sell. Co-operation, with its resultant division of labor, is a distinct benefit to the members also. They are free to devote all their time and energy to producing the crop. Methods of planting, of spraying and of cultivation can be worked out and, if I may use the term, standardized. When a new idea or improved process is evolved it can be exploited for the common good, and when a member grows degenerate a revival meeting, accompanied by prayer and exhortation, may be beneficial. Should this fail, an association funeral is in order if peace and superior quality are to be maintained in the association.

As soon as possible make the organization a centralized corporation. Perhaps the best or only available space for loading cars can be occupied by the association shed; perhaps the only adequate icing facilities can be similarly controlled. If the home market is spoiled by dumping the culls and poorer grades of berries upon it, while profitable export prices are maintained, it will have a strong tendency to increase the membership. Ship in well made cases, marked with the association label, and set a standard price for picking. Incorporate under the laws of your state, to do an interstate business, with a capital stock large enough to defray all current expenses, insure the employment of strictly business methods and, to give solidity and prestige to the association as a solvent concern, let the articles of organization and by-laws be carefully drawn to permit of centralization, unified control and the bonding, fining and discipline of intractable members,

From various causes standard varieties deteriorate or become unpopular, and their places are taken by more recent introductions. The horticultural journals and trade catalogs furnish the best means of keeping in touch with the progress that is being made in this direction. Also it is well to do a reasonable amount of testing. Twelve or twen-

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ty-five plants each of ten or twelve promising new varieties make a very good test. For this purpose plants may be obtained from even the most distant states. Longitude is less of a barrier than latitude. There is an element of risk in setting southern plants; they are often too far advanced in growth upon arrival to stand a reasonable chance of succeeding. Exception might be made in favor of a very late variety. Southern plants are still later when taken north, and additional lateness might compensate for the loss which would probably occur. Otherwise the shorter the distance between its old and its new home, the better for the plant.

Good culture pays large rewards. Both experience and observation lead to the conclusion that most of us err, if at all, on the side of insufficient care. The method of culture—whether hedge or matted row—and the degree of intensiveness thereof, must depend on the quality of fruit demanded and the price and availability of land and fertilizer, commercial and otherwise. The point at which increased expense ceases to return still larger profits must be determined by each man for himself.

We select our strawberry field with reference to the general fitness of the land rather than to the previous crops it has borne. From twenty to thirty tons per acre of old, well-rotted manure is applied. The ground is plowed in the spring, then carefully and thoroughly dragged. The plants are set with a tobacco transplanter in rows four feet apart, the plants twenty-three inches apart in the row. Two rows of staminate, alternate with two rows of pistillate plants. We aim to hoe and cultivate at once after planting. We cultivate at intervals of a week or ten days until August, and less often after that—usually from fourteen to eighteen times during the season. The field is hoed from five to seven times, placing the early runners in line and weighing them down, to encourage rooting, with stones or lumps of earth. The blossoms are removed two or three times during May. There are about twenty varieties in the main field and ten or eleven more in the experimental bed. The Good Luck and Red Bird appear the most promising. As soon as possible after the ground freezes, we mulch with oat straw or coarse manure. The straw insures a cleaner field with less weeds, but the manure mulch usually produces a larger crop the ensuing year. The field is usually sprayed a few times to minimize the loss due to rust, blight and insect pests. The entire process represents an expenditure of about one hundred dollars per acre. Under normal conditions a crop of 3,000 to 4,000 quarts per acre should be produced. As there are on the average two

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crop failures and two half crops every ten years it is easily seen that a return of $250 to $300 per acre is required to show a profit for the ten-year period.

Mr. H. J. Baldwin: What is the object of putting in two rows of staminates?

Mr. Richardson: It is merely a matter of convenience, so that you do not have to make a trip back, and if you want to dig out a row of staminates you have a row of pistillates left. In case of such a drouth as we had this fall it would be difficult to carry the beds through.

Mr. H. W. Harrison: In regard to drouth, thorough surface cultivation is the best thing that can be done. I have a sandy loam soil and have trouble with drouth, and the dryer it is the more cultivation I give. When I say surface cultivation I mean deep cultivation. The root of the strawberry plant goes down, and you want to cultivate to get as far down as the root.

A year ago the ground was hard and dry, and my neighbors lost their plants last spring, and we found they had some root disease. We tried to find why it was. The only trouble with those plants was because the ground was so dry they could not carry through. Speaking of drouth, some of my plants were injured, but I had one corner where there was practically no soil but gravel, where I cultivated them in a thorough manner, and last spring I dug plants there, and I found the best plants there.

Mr. C. L. Richardson: Did you ever mulch in summer to conserve the moisture?

Mr. H. W. Harrison: No, I never did.

The President: Have you, Mr. Richardson?

Mr. C. L. Richardson: I have.

The President: Is it as good as cultivation?

Mr. C. L. Richardson: I believe fully as good.

Mr. H. W. Harrison: I manured heavily between the rows with well rotted manure.

The President: That is a mulch practically.

Mr. H. W. Harrison: The speaker has recommended the matted row; I have been using the matted row, but I am going to use the hill system. If you plant the rows three feet apart and a foot apart in the row, and let two runners grow with two plants on each runner, you would have five plants in the hill, and I believe, if you have proper soil and give the plants proper cultivation you can get two quarts of berries from each hill, during the four weeks that the picking season lasts. It seems to me that is better than the matted row.

The President: Mr. Richardson, what have you to say about it?

Mr. C. L. Richardson: I have had little experience with the hill system, but I have had the best results with the matted row system. I had an acre in the hill system, and every other plant died, so the plants were too widely scattered, but with the matted row system, those open spaces will be filled up. We do not have the full matted row, for I have seen them at Eau Claire, where they have rows three feet wide at

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times, and while I have tried that many times and have got a good quantity of berries, I do not believe it is an advantage to grow them so thickly of our standard varieties; I do not think they produce to advantage. The Senator Dunlap is a striking example, as you can kill it by planting it too thickly.

Mr. G. B. Black (Iowa): I would like to sound a note of warning against the deep cultivation which our friend advocated. I have found that I do not want deep cultivation.

Mr. C. L. Richardson: What is the character of your soil?

Mr. Black: Sandy loam underlaid with clay. You don't want to go down more than three inches. I know I don't want to go down as deep as the roots go. You want to keep the top thoroughly pulverized with a dust mulch not over two or three inches deep.

Mr. C. L. Richardson: Reports have come in of difficulties with root rot.

The President: What do you mean?

Mr. C. L. Richardson: Examine a plant you have planted, say, along in June or July, and you will find that plant has died. Sometimes it looks as though it had rusted—that is an old story. Examine the root, and you will find it is dead, and if you cut into the crown you will find it yellow. I have had it for a long time, and it has been the most serious thing I have had to contend with.

The President: Any one else here who has had any such difficulty?

Mr. C. S. Harrison: I lay it to the dry weather.

The President: Then you don't lay it to winter injury?

Mr. C. S. Harrison: I lay it to winter in the way that they grow dry. You can call it winter injury or anything you please.

The President: Can you prevent it by heavy protection?

Mr. C. L. Richardson: No, sir, he cannot.

Mr. C. S. Harrison: No, sir.

Mr. Emil Sahler: What is the best mulch for a winter protection, slough grass or straw?

Mr. C. L. Richardson: I don't know about slough grass, but straw is very good; there are less weeds in it.

Mr. S. D. Richardson: I had two beds, and all the old plants died in the fall. The old plants died without exception, there were not a dozen left, but the young plants were all right that I raised from those set in the spring.

Mr. Geo. J. Kellogg: Do you find a tobacco planter firms the plant enough?

Mr. C. L. Richardson: No, sir, I send some one behind the machine to step them firm.

Mr. Smith: What would you use for blight?

Mr. C. L. Richardson: A 4-40 Bordeaux mixture tested with litmus paper.

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Work at State Fruit-Breeding Farm.

CHAS. HARALSON, SUPT., EXCELSIOR.

The work at the State Fruit-Breeding Farm is progressing very satisfactorily. We are beginning fruit-breeding on a large scale and hope to continue the same. We have approximately 100,000 seedling plants of various kinds planted on the farm.

Crossing work with strawberries last winter in the greenhouse was begun about January 15th and continued for two months. Some over three hundred plants were grown in pots for this purpose. A number of the best commercial varieties, wild and hybrid plants, such as Sen. Dunlap, Alaska and many others, were used for this purpose. Some over three hundred combinations were made, and the result is about 20,000 plants. Most of these seedlings were planted out in the field during the summer.

The hybrid strawberry plantation of nearly 3,000 seedlings came through the winter in the very best condition and was very full of fruit. About 200 plants have been selected, but will be weeded down to a much less number, although they are all promising. The fruit compares in size and quality with many of the commercial varieties. They have been planted in small plats for further trial.

The raspberry and blackcap seedlings look well and are loaded with fruit and will give some interesting results.

The plum and hybrid plum apple seedlings of various kinds are making a strong growth this season.

We have a goodly number of seedlings of apples, crabs, pears, plums, grapes and small fruits of various kinds growing in our seed beds. It is too early to predict what the outcome will be, but, take it all together, everything looks favorable.

Feeding Berry Plants.—A strawberry, to succeed, has to have its own home. What will succeed on your ground may not succeed on mine, if I am two or three miles distant or, maybe, across the street. There is something very peculiar about the feeding of strawberries. As far as the pedigree is concerned, I believe that is all in the soil. It is the food that the berry requires, which assimilates itself to the berry. Get the strong, rampant grower that will give you the strong fruit buds, for without strong fruit buds it is impossible to get fruit.

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Pruning the Orchard—When, How and Why.

DEWAIN COOK, JEFFERS.

Pruning is the removal of superfluous branches, the object being to get more and better fruit. When trees are left to themselves the branches crowd one another and do not permit of sufficient sunlight and air for the development of the fruit on the inner branches; there is also a tendency to lean in the opposite direction from which the prevailing winds come during the growing season, and that is from the southwest and towards the northeast; and sometimes there is sunscald and decay on the south or southwest side of the trunk of the tree. Such defects in the tree can be largely or even entirely prevented by a timely and judicious use of the pruning knife.

Trees that have been kept properly pruned produce larger and finer fruit, and there is also not so great a tendency to the fungous diseases known as the apple scab and the ripe rot, and, we may also add, there is usually not so much apple blight on the pruned trees.

We also prune to prevent forks from forming upon the main body of the tree and to prevent branches from injuring themselves or any part of the tree by crossing and rubbing each other to their mutual injury, and we prune so that it will be more convenient to cultivate among the trees.

These briefly are the writer's reasons for pruning the orchard.

When to Prune.—The old saying, "prune whenever your knife is sharp" holds good in many instances, though practical orchardists differ as to the time of the year this work should be done. Personally, I do most of this work in the fall of the year after the foliage has fallen. We sometimes prune on warm days during the winter. We do not do very much pruning of the apple during late spring or early summer, as we sometimes have had the apple blight attack the stubs where the pruning had been done so late in the season that the ends of the stubs where the branches had been taken off had not thoroughly dried out and hardened before the growing season began. Yet there are many orchardists who insist that the only proper time to prune an orchard tree is in June, when the tree is growing rapidly. that the wound made then by pruning will heal over more quickly than if done at any other time.

How to Prune.—We consider this of more importance than "when to prune." Pruning cannot be learned by reading an article on the subject; it cannot be fully taught on paper.

There must be an actual observation of the work as it is being done. In our pruning we aim to protect the leading stem, keeping

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it upright if possible, with branches extending out at intervals from it, but as the tree gets older and larger this leading stem often loses its identity, some or many of the larger upright branches outgrowing it, till the leader has entirely disappeared—or more often it can be located as one of the main branches on the north side of the tree, with about all the rest of the treetop growing to the south or southwest of it. My own trees have been kept fairly well balanced because they have been pruned many times with that object in view, otherwise they would have leaned badly to the north and east.

As a rule, our apple trees make the strongest growth on the side opposite the sun and the direction of the prevailing summer south and southwest winds. Hence most of the pruning should be done on the north and the northeast sides of the trees in order to keep them properly balanced, cutting out entirely some of the leading branches on that side, cutting back other leading branches one-fourth or more of their entire length, and leaving all of the leading branches that are growing on the south and southwest side of the tree. By this system of pruning we can balance up a tree that leans over quite badly to the northeast.

I do not care to advocate either high-headed or low-headed apple trees. I consider it largely a matter of convenience and somewhat of environment. My practice has been to head the trees rather high, perhaps too high. When I consider the benefits derived from having a better circulation of air under the heads of the trees, or when I have need to cultivate or plow in my orchard, then I am glad that the lower branches are some distance from the ground. But then again when I come to gather the fruit and cannot get all the apples from the tree by using a sixteen-foot ladder, and the way the fruit bruises that falls to the ground—then I wonder why on earth I did not let my trees spread out more near the ground.

But where trees have plenty of room in which to grow—say twenty or twenty-five feet apart each way—they will not need so many of the lower branches taken off, as will the trees that have been planted nearer together and have not plenty of room to spread out in.

In pruning we sometimes find one branch crossing another in such a manner that both are getting injured by the contact. Of course one of them has got to go—we cut off the least important one. And we cut out any dead or dying branches wherever we find them.

We do not thin out many of the short branches or spurs growing on the inside of a young apple tree until we get a crop or so from that tree, as it is on those short branches that we get most of the fruit

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during the early fruiting stages of the tree; but as the tree gets older, and the fruiting buds grow upon the outer branches and less upon the inner ones, then we take our knife and cut out those inner branches, everything that refuses to form plenty of good, healthy fruit buds.

After a tree has borne a few crops, if it has been kept in proper shape up to that time about all of the pruning it will need will be to have those branches cut out that do not form fruit buds readily, and these will be found mostly on the inside of the treetop, where there is a scarcity of sunlight and air. In some cases it will be found necessary to cut off large branches one and one-half or two inches in diameter, and in such cases the stub should always be covered with grafting wax or paint, which will prevent the rot fungus from getting into the tree through the stub. This is liable to occur if the paint is not applied. As I said at the beginning, we can safely prune small branches whenever the knife is sharp.

There is a great deal of truth in the old saying, "prune when the tree is dormant for vigor of the tree, but for fruit prune when the tree is growing."

Summer pruning is a greater shock to the tree. Its effect on the tree is somewhat like girdling with a knife. Injury to the bark by hogs, sheep or otherwise—or by root-pruning if it is severely done—will force buds and thus induce fruiting, but it lowers the vitality and is not conducive to the longevity of the tree.

GRAFTING GRAPES.—To propagate new varieties of grapes by grafting, single bud cuttings about two inches long are split half an inch from the base upward and inserted upon wedge-shaped pieces of root, say two or three inches long, and wound firmly but not tightly with string, the lower ends being left uncovered, so as to take root. They are then put in boxes three or four inches deep and given bottom heat until roots are formed and they can be planted in the open ground. To graft old vines of undesirable varieties the stock is sawed off smoothly just below the surface of the ground and scions inserted by the cleft graft method. In this case, the scions are cut wedge-shape and inserted in the slit made by cutting the stalk downward. They are bound in place with cotton string and not waxed, but covered with earth to prevent drying out. The time for doing this varies. Some growers do it before growth starts, others hold the scions dormant until the time of vine bleeding has passed; still others wait until the fall and then cover the grafts with a large flowerpot heaped around the outside with earth, and then covered deeply enough with straw to protect from frost. Grafting old vines is often a failure, because it is so simple growers will not take sufficient pains to do it properly. Any reasonable care, however, will produce success.

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Teachers to Co-Operate with Forest Service in Tree Study.

U. S. FOREST SERVICE, WASHINGTON, D. C.

Teachers throughout the country have been invited by the United States Forester to co-operate with the Forest Service in an effort to obtain more definite knowledge of the characteristics of the most important forest trees of the United States. To do this it will be necessary to obtain a large number of volunteer observers who will collect material on the time of leafing, blossoming and fruiting of the various kinds of forest trees. In his letter inviting the co-operation of the teachers, Forester Pinchot says:

"Knowledge of this kind is greatly needed and will be of value from the standpoint both of education and of practical forestry. For educational purposes the results obtained for each species, averaged and presented graphically by means of colored charts, will be available to all who are interested in the subject and particularly to schools. They will form virtual 'tree calendars,' and will be valuable aids to nature study.

"Children can readily be interested in the actual work of obtaining records. This should form an attractive outdoor feature of the school work that should serve to develop the faculty of accurate observation, and at the same time to promote an interest in forestry which may lead to a better appreciation of its aims and methods. It may also prove to be a profitable addition to botany courses for older students.

"A study of this kind will be of great value to practical forestry, since the proper treatment of forests depends partly upon a knowledge of these characteristics of trees. For example, the time of year at which a tree leaves out and blossoms is one of the indications as to whether or not it is frost-hardy in a given region, and the length of time that a tree is in leaf influences the growth it is able to make during the season. Knowledge of the time when seeds of each species ripen in various localities is of great value to those who are collecting seed, since seed often deteriorates or is eaten by squirrels and birds if not gathered and stored as soon as ripe.

"Another result of this study will be a more intimate knowledge of climate as manifested by plant growth, for differences in climate are shown by plant life as well as by instruments, and a preliminary idea can thus be gained as to whether a given region is suited to a valuable tree which it is desired to introduce there. Many such examples could be given, but sufficient has been said to show that the results of these observations will be a real help to practical forestry, in addition to their general interest and educational value. Volunteers will later be supplied with publications and charts containing the information they help to gather, as a return for the services rendered."

On request, the Forest Service will be glad to send forms upon which to record data and a pamphlet containing full instructions as to the nature of the observations and how they are to be made.

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A Ten Years' Experiment in Top-Working.

F. W. KIMBALL, AUSTIN, MINN.

Early in the 90's I chanced on an article by Edson Gaylord on top-working. Having met him years before, I started correspondence with him and later visited him, and he took great pains to take me over that section and show me the practical results of top-working. From that time on I became convinced of its worth, and having but a small orchard with little chance of enlarging it—and with all the zeal of an amateur—I commenced to graft to everything that showed any merit or that from reading I judged I would wish to try. Having but a small space, I did not conceive that I could ever consider it in the light of a commercial orchard and thus was all the more ready to sacrifice tree after tree to the craze, thinking at least that if I did not realize much from it that those interested might read the results or at least give them a study. The craze resulted in my setting and grafting until I have nearly 100 varieties growing, but luckily I did set a considerable number of some varieties.

I am thoroughly convinced of the value of top-working, but since the time I commenced, about 1894 or 1895, the winters have been such that but slight ideas can be formed as to what it might do in a trial winter. Perhaps the only gauge I have up to the present time is the ability so far to raise varieties such as could not be raised, I think, successfully, on the open, level prairie of this section, such as Grimes' Golden, Jonathan and others of that ilk, and I think that probably a test winter would eliminate these from my list, especially had they borne a heavy crop the season before. But if they did, I should immediately set and graft to these same varieties, as they are so choice that I would miss them—and my present trees do not owe me anything.

However, would say that some varieties, like the Jonathan and Geniton, do not seem to fully develop their size or best quality in our short seasons. It does not pay to graft the early apple, as we have plenty of good quality and extreme hardiness. When it comes to late fall and winter, there is where we can get in our work. Only those having a genuine love of horticulture—and a love of good apples—will, as a rule, do any top-working. I am thoroughly convinced that the Northwest will eventually have a pomology of its own that will be both hardy and of exceeding fine quality, which will come through its own bred seedlings.

Few of us old codgers, while we might be entirely willing to wait, could we do so, will probably see the fruition of this state of affairs.

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So if we wish to raise choice winter apples we must take the short road by way of top-working to beat old Father Time, and can select many choice varieties that already have been developed in a more congenial clime. I am not convinced of all the virtues attributed by some to top-working on a hardy stock; I very much doubt if the sap taken through a hardy trunk imparts much if any hardiness to the scion growth, though it may. I think an examination of any of our semi-hardy varieties, after a heavy crop followed by a hard winter, will almost uniformly show a failure in the main crotches, and we eliminate this mostly by grafting out on the limbs of our hardy stock, thus gaining our chief advantage in top-working. Who that has studied the effect of our climate on semi-hardy trees has not found trees with the small limbs and twigs seemingly vigorous when the inside of the main trunk and large limbs were a mass of punk?

My top-worked trees are mostly on the Virginia and Hibernal; I have now discarded the Virginia and use the Hibernal only. There may be better stocks, and I see Mr. Kinney prefers the Gould crab. I do not personally know this tree. The Hibernal is easy to get, and I have never put anything on it that did not make a perfect union. It is hardy in stem and root, and has a perfect collar, so it is not easily broken down and, I think, is in every way desirable. On it I am raising Grimes' Golden, Jonathan, Fameuse, or Snow, Connecticut Seek-no-Further, Newell's Winter and many other choice kinds. I would not put out even a Wealthy on its own roots, for if grafted within one or two years after it is set, it is but a small job, and many can be grafted in a day, and it is an insurance that certainly pays.

Mr. Bates: When do you cut your scions?

Mr. Kimball: The proper time to cut them is in the fall of the year. I have a poor place to keep scions; my cellar is not dry, so I wait until spring to cut them. During the time that I have been grafting the conditions have been such that I have had no trouble with scions. In 1899 some scions were a little discolored, and I used only the better part of them.

Mr. Seth Kenney: How long have you had the Jonathan and the Grimes Golden?

Mr. Kimball: I can't say. I have had them perhaps ten years. I have had two or three barrels.

Mr. Philips: I have had them twenty years.

Mr. Kimball: Grimes' Golden and Jonathan have shown signs of being strictly hardy, but I expect when we get what we call a severe winter it will cut them out. I should deprecate losing those varieties; they are too choice to lose.

Mr. C. S. Harrison: They would not live on their own roots?

Mr. Kimball: No, I don't suppose they would.

Mr. Philips: What do you know of the McIntosh Red?

Mr. Kimball: It may be of some value according to present indications.

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Prairie Plantations.

J. P. WENTLING, ST. ANTHONY PARK,
ASSISTANT PROFESSOR OF FORESTRY, UNIVERSITY OF MINNESOTA.

One of the essentials of a well managed prairie farm is a well cared for grove of forest trees advantageously located. Protection from wind is one of the important problems with which the prairie farmer must deal, and wherever agriculture is practiced on the prairies he will find it profitable to devote a few acres at least of good land to tree growing.

It is a fact now generally recognized that the best agricultural conditions exist where about 15 or 20 per cent of the land is given to forest growth. This is probably more than will ever be devoted to tree growing on the prairies, but at least enough can be grown to produce a marked effect on farm development and furnish a wood supply for many farm purposes. No farm improvement is of greater importance than effective protection from winds to the farmstead, and none will repay better for the expenditure of time and money. The home, the farm buildings, the farm stock, the garden, the orchard and the field crops demand this protection.

Nothing serves this purpose better than a shelter of trees. The same grove of trees that deflects, and affords shelter from, the excessively dry and cold winter winds, also supplies the fireside with a large share of the winter fuel, and the plantation that obstructs the continuous sweep of the hot and dry summer winds furnishes the posts for the farm fence and the other necessary wood needed about the farm.

Prairie planting began with the first settlers, who, coming largely from the east, planted whatever varieties of trees were available without much or any consideration of their adaptability to soil or climatic conditions. The results of these attempts are still in some places evident, either as a few scattered remnants of dying trees or as successful groves which have come to be landmarks in the region.

Not a few plantations exist today which were made not so much for protective purposes as to meet the requirements of the law in obtaining a homestead. The timber culture act of 1873 did much to encourage tree planting in a way, and many groves on the northern prairies are directly due to it. In many cases little or no concern was exercised after the required number of trees, living and of a certain age, had done their part in securing the homestead. Groves of this kind may be found that have had no care or attention since title to the land was obtained. Trees are overcrowded, dead, broken, stunted, and the entire growth so dense as to be almost impassable.

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The two main causes of failure in the planting of windbreaks and shelter belts have been an *injudicious selection of species* and *lack of proper care in planting and subsequent treatment.*

The prairie tree-planter, more than any other, is confronted with the problem of selecting species suited to the soil and situation, and that will endure without injury both summer and winter drought. Failures have so frequently occurred through ignorance of this fact that some have come to doubt the possibility of growing trees on the prairies.

White Spruce.

Running north and south through this state is the conflict line between the prairies and the eastern forest, where lies the western limit of the range of practically all the species found in the eastern part of the state and eastward. Many species that are thrifty and valuable timber trees in the eastern part of the state will fail utterly if planted in exposed situations on the prairies. The farmer who has lived in the eastern part of the state on moving into the western portion finds that his familiar trees are not adapted to his new situation. The

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farmer who has with success cultivated trees on his farm finds that he cannot use his customary methods and species in another situation, although in the immediate neighborhood. It is even necessary to use different species on different parts of the same farm for the sake of adaptability.

Trees require centuries to adapt themselves to new conditions, hence such species must be selected as have for ages been accustomed to just such conditions as the prairies offer. As a rule eastern species will not prove successful unless protected, while many western species, long accustomed to severe conditions, make remarkable growth in the severest situations. Tree planters on the prairies must recognize these general principles.

In the planting of cuttings, as of willow or cottonwood, not a great deal of care or skill is necessary. This kind of care will, however, cause failure when practised with seedlings where exposure of roots occurs, especially so with conifers, commonly called evergreens. Improper handling and lack of knowledge of the nature of conifers have caused even their scant use to fall into disfavor. In traveling over the northern prairies protective plantations of coniferous species are so rare as to become landmarks and objects of curiosity, while cottonwood and box elder in all kinds of conditions are everywhere in evidence.

After the trees of a plantation have attained some size, many planters think that they have done their part and that the trees need no further attention. Usually the best part of the grove becomes a general storehouse and dump ground for all kinds of discarded farm implements and machinery, in the moving of which trees are ridden down, broken and injured. Usually the farm cattle are given access to at least part of the grove, and the effect of trampling the soil and injuring the roots is well marked. Extensive observation has shown that many farmers feel that they must have a good crop of grass under the trees in the grove for pasture purposes. It is not unusual to find groves with a sod so thick and tough that it is broken with difficulty. Such conditions are entirely contrary to any natural conditions that must accompany and are always found where trees make good development. Trees will keep alive in such situations for some time, but they cannot and will not thrive where a grass sod robs the soil of the moisture which the trees cannot spare.

In prairie planting, particularly for protection, I admit that I am partial to conifers. Among these are found some of the most hardy and effective trees for prairie conditions. They are able to withstand the severest winter conditions as well as conditions of summer and

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the consequent shortage of moisture. Their great benefit lies in affording the same protection in winter as in summer. I believe that they are the coming trees of the northern prairies, and their planting is worthy of much encouragement.

There is no particular secret in the handling of conifers. They have a few peculiarities that, when understood, will enable them to be handled as easily and safely as a willow or elm. They start growth later than deciduous trees and must be planted before the growth begins. Under no consideration must the roots of conifers be allowed to become dry. Most of them contain resin which, when dried, becomes waterproof, and then the evergreen leaves continually demand

The Bull Pine

moisture which dry roots cannot furnish. Exposed and dried conifers may remain green for a short time and even grow a little, but they will eventually succumb.

The obtaining of planting material is an important consideration. As a rule the farmer does not give the proper and necessary care to warrant his establishing seed beds, nor does he have the necessary knowledge to rear seedlings through their critical periods. Then, too, the quantity which he needs is not sufficiently large to warrant the time and trouble. All things considered it seems advisable that planting stock be secured from one who is experienced and practical in the growing of them; that is, from some good nurseryman. Procure either trees ready to plant in the permanent site, or one year old stock and cultivate it in nursery rows until ready to plant. Experience has shown that the best planting stock is that which is from three to five years old and several times transplanted. Another consideration, and oftentimes an important one, is that in nursery stock ready to plant the farmer gains from three to five years on his plantation.

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I want to call attention to a few of those coniferous trees which have proven their worth for prairie planting.

I would place first the Western Yellow Pine, commonly called the Bull Pine. It seems to be the most adaptable of these trees. It is not exacting and will grow in most any kind of soil and resists drought to a remarkable extent without injury. It will endure any amount of exposure and will make good growth, either in plantations or singly. It produces heavy foliage and is admirably adapted for windbreaks in the most exposed situations. Planting stock should be at least twice transplanted so as to subdue the tap root until final planting.

The White Spruce is a valuable tree on account of its dense foliage, quite rapid growth and its hardiness. It endures shade so well that there is no better tree for underplanting in old and declining groves. In such cases the deciduous trees may gradually be removed as the growth of spruce develops. It is a long-lived tree and a very valuable one for the prairie.

The Colorado Blue Spruce is admirably adapted and will endure severest conditions. It is not only hardy, but is exceedingly handsome and is worthy of serious consideration by the prospective planter.

There is some doubt in recommending Austrian and Scotch Pine. Both require some protection from other trees. The Austrian Pine seems frost-hardy as far north as Swift county, in Minnesota. It is a more desirable tree than Scotch Pine, is not soil exacting to the same extent and forms a better crown. It is desirable for inside rows of windbreaks. In Hamlen county, S. D., a plantation of Scotch Pine in an exposed situation, consisting of 280 trees, had after fifteen years but fourteen straggling trees left.

It is hoped that conifers will be more generally planted in the prairie states, particularly for windbreaks. They are among the most desirable for this purpose and with a little judicious care will not disappoint the planter.

STEVENS' LATE CHAMPION STRAWBERRY.—This is a new strawberry that is winning good opinions wherever given a fair test. It is an eastern variety but is succeeding equally well in the west. As its name implies, it is a late berry of the Gandy type, but not as late as that old standard. It is much more productive, however, and its berries run large to very large. The king berry of each cluster is inclined to be flattish. The Stevens is a big, vigorous plant that will take care of itself almost anywhere and give large yields of handsome berries. The berries ship fairly well, but are not quite as firm as the Gandy. They are of good quality, and their flowers are perfect and strong pollenizers. It is a much stronger grower than the Gandy and shows great vitality.—Orange Judd Farmer.

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Foul Brood a Menace to Bee-Keeping.

WM. RUSSELL, STATE BEE INSPECTOR, MINNEAPOLIS.

It does not require any argument, at least to the progressive bee-keeper, to prove that the disease known as "foul brood" is a menace to the bee industry of the United States.

Up to November 5th, 1906, the beekeepers of eleven states of the Union had succeeded in convincing their respective legislatures that foul brood was a menace to their industry, and laws, more or less effective, were passed with the idea of holding it in check. Since 1906, Missouri, Minnesota and Vermont have fallen into line with fairly good foul brood laws. The Dominion of Canada, in the eastern part, was so overrun with foul brood that the industry was seriously interfered with. For years William McEvoy, Canada's veteran bee inspector, fought the disease single-handed, but some two years ago the Canadian beekeepers were able to convince the Minister of Agriculture that one man could not do the amount of work necessary to cope with the disease, and the result was a larger appropriation and the appointment of six inspectors.

But, to come nearer home, in 1906 the Minnesota beekeepers went before the legislature with a very modest bill and succeeded in convincing all except some thirteen members of the house that their industry was truly menaced by this disease, and the data now available proves that their assertions were well grounded. Last year's report shows 1,378 colonies diseased and exposed to contagion, and the report for 1908 shows a still greater number diseased.

Here in Minnesota the industry is menaced by foul brood in several ways. It may be introduced through buying queens, although the chances are rather remote. Buying bees, either by the nucleus or full colony, is a very fruitful source of contagion, and a good many cases of disease in otherwise healthy localities have been traced to this source. Feeding bees imported honey has resulted in disaster in a number of cases that have come up for treatment. Importing bees from states where there are no foul brood laws is another source of contagion. One illustration may be given to emphasize the danger from that source. Near a yard of fifty healthy colonies was found one diseased colony, a gift from a neighboring state. Being at a time when robber bees were very active, it was considered best to destroy that colony, but the law of Minnesota does not give an inspector the power to destroy diseased bees, and it was rather a difficult matter to convince the owner of that colony that it was going to be to his interest to have it burned up. He was convinced, however, and a bonfire was the result, but there are very few who care to do that kind of convincing.

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The greatest menace of foul brood to the bee industry today is ignorance. The man to whom the inside of a beehive and all pertaining thereto is a sealed book, a complete mystery; the man who keeps bees as they were kept 300 years ago and wears a fur coat and a sack tied over his head when he attempts to hive a swarm in the month of July; the man who leaves his bees severely alone in summer, because "they are mad when you go near them in warm weather," and kills off a few poor after swarms, or parent colonies, along in January when they are not mad, in order to get a few pounds of poor honey and bee bread combined—when foul brood gets a start in the apiary of such a beekeeper (?) it is only a question of time when all of his bees will be dead and the little honey left in his hives will be robbed out by any bees that are located within flying distance of the diseased material, and the chances are that the old hives containing the diseased comb will be sold cheap (?) to some neighbor or beginner, who will, in all probability, also have "poor luck with bees."

The members of the National Beekeepers' Association have long understood that foul brood was a serious menace to the bee industry, and their cry against it has been both long and loud. At the national convention held in Detroit, Mich., last October, a resolution was passed recommending an advance on the present tariff rate on honey and a tariff on beeswax. It has been said that foreign honeys are scattering foul brood in the United States, and there should be a sufficient tariff to prevent its importation into this country, not so much to cut off competition with domestic honey as to stop the spread of European and American foul brood, just now gaining rapid headway in the United States. It is claimed that this imported honey, much of it coming from ignorant natives of foreign countries where disease is rampant and unchecked, is now scattering disease in new territory of the United States. Cuba may be mentioned as a case in point. Foul brood is rampant there, and no law whatever to hold it in check. Most Cuban honey, however, goes to England.

The United States Department of Agriculture recognizes the fact that foul brood is a menace to the bee industry, and of late years the Bureau of Entomology has been giving a good deal of attention to the subject of bee diseases and how to treat them, so that any progressive beekeeper today ought to be able to make himself master of the situation should disease make its appearance in his apiary. It may be well to state that the Bureau of Entomology stands ready at all times to give advice, and lends its influence to the beekeepers of any state who are trying to secure foul brood legislation.

Red tape seems to be quite a feature of several of the state laws, and to a layman it would seem about as easy to amend the constitution of Minnesota, or get a home rule charter for the city of Minneapolis as to put the machinery of some of those laws in motion. The Texas law is practically a dead letter, and the beekeepers are doing their best to have it repealed and a more effective law placed on the statute book. There is, fortunately, no red tape about the Minnesota law.

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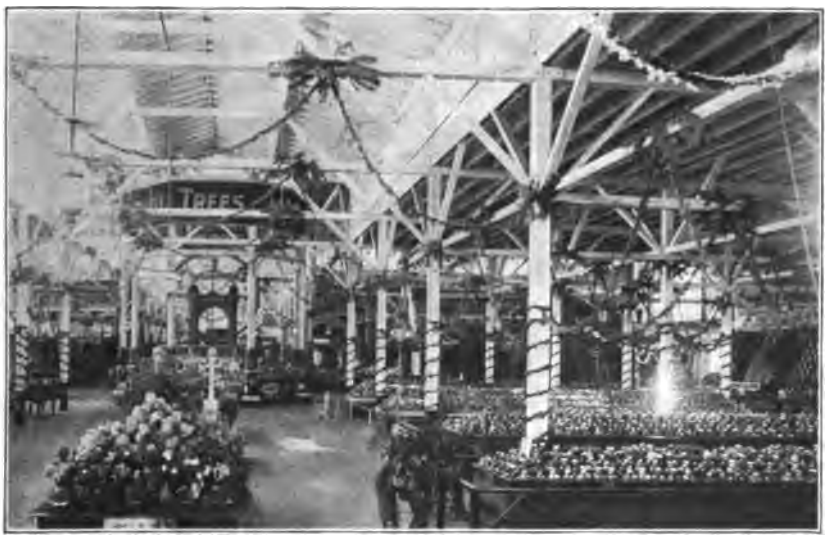
Horticulture at the Minnesota State Fair in 1909.

A. W. LATHAM, SEC'Y.

No one of the fifty annual state fairs held in Minnesota has carried a better show of the horticultural products of the state than the one which closed on the evening of Saturday, Sept. 11th last. The north half of the large agricultural hall, including a space one hundred and sixty by one hundred and eighty feet, approximately, was occupied as usual by this exhibit, the same space indeed that it has used now for a number of years.

There were eight tables in the center of the hall loaded with fruit, mainly apples, one of the smaller tables being occupied by the grape



Horticultural Department, Minnesota State Fair, 1909. View from north entrance looking to the right.

exhibit, and one in part by the plum exhibit. The fair being a little later this year than a year ago, and the season a little earlier, the fruit shown was nearer to being ripe than at any one of the recent state fairs. Apples were very well colored, and many of them showed something like the beauty of full maturity. These conditions contributed very much to the handsome appearance of the display and the size of the fruit exhibited.

Approximately $1,300 was offered in premiums this year for exhibits of fruit and $800 for exhibits of plants and flowers. Nearly all of this will be called for by the exhibitors, the larger premiums being pro-rated, that is, the whole amount divided up amongst all of the ex-

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hibitors for that particular award according to the comparative merit of each exhibit. All of the money offered for these pro-rated premiums will of course be called for.

The most interesting fruit table undoubtedly was the one occupied by the exhibit of seedling apples, and it was scarcely large enough for that purpose. There was shown on this table 377 plates of seedlings, about half of them being in collections and the balance single plates of summer, fall and winter varieties.

Many of the winter varieties made a beautiful showing, but as to quality of course at this season of the year little could be ascertained. Most of these winter fruits, or, rather, fruit from the same trees, will be shown again at the winter meeting of the society.

Mr. T. E. Perkins, Red Wing, made a very complete exhibit from his notable seedling orchard, something near one hundred varieties being in this one lot.

Probably the handsomest fruit table in the building was occupied by the exhibits of ten and fifteen varieties. There being a comparatively small number of sorts in these exhibits, nearly every specimen shown was of extra size and quality. There were twenty-three exhibitors in the ten variety class, making 230 plates, and seventeen exhibitors in the fifteen variety class, 257 plates.

Of single plates of apples there were exhibited by the professional growers 211 plates, by the amateur growers 354 plates. The tops of all the tables that were adapted to receive this class of exhibits were well loaded with pecks of Duchess and Patten's

1 2 3

1. Thos. Redpath, Ass't Supt. Hort. Dept.
2. Mr. Yerxa, Ass't Supt. Agri. Dept.
3. Chas. Nordine, Florist, Jewell Nursery Co.

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Greening apples, of which there was shown the surprisingly large number of fifty-two, twenty-seven of the former and twenty-five of the latter. Twenty-five dollars was distributed amongst the exhibitors in each of these classes.

It would be too tiresome to the reader to undertake to give in detail all of the statistical facts connected with these exhibits. Briefly there were five collections of apples shown by the professional growers, aggregating 231 plates; and six lots shown by the amateur growers, aggregating 203 plates. There were 118 plates of crab apples shown, 274 plates of grapes and 246 of plums. Including some classes not referred to above, there were exhibited altogether in the horticultural department 3,807 plates of fruit. To this may well be added the plates of various fruits shown in the county exhibits, which were to be found in the other part of the hall, bringing the total of fruit exhibited in the hall up to the grand number of 4,993 plates.

Special mention should be made of a very fine showing of fruits from the State Experimental Farm, many of them being new varieties originated from the seed—ninety-eight plates of apples, fifty-two of grapes and eight of plums and two seedling cherries. This exhibit, representing the development of seedling work at the station, as well as work along other experimental lines, may well be repeated annually, indicating as it does the increasing interest in this direction.

There was also a large exhibit of new varieties of apples made by Mr. Thos. E. Cashman, superintendent of the Owatonna orchard station. The exact number of varieties shown is not known to the writer, but judging by the size of the exhibit it must have approximated 100 plates. There were many handsome sorts in this collection, which judging from appearance give promise of much value. Some of the ripest of the fruit from this collection was saved for further exhibition at the winter meeting, and it will be supplemented undoubtedly with fresh fruit from the station of other later maturing varieties.

The Jewell Nursery Company occupied its usual place in the center of the hall with a unique and beautiful display of fresh and bottled fruits, with a Ferris wheel above appropriately ornamented and in motion, the whole making a fitting center for magnificent horticultural hall.

B. Terrell Hoyt had, as heretofore for several years, an exhibit of floral products in the northwest corner of the hall, and Northrup, King & Company a characteristic seed exhibit near the west door.

The judging was done entirely by home talent, Prof. S. B. Green, Prof. LeRoy Cady, Mr. Wyman Elliot, Mr. Chas. Haraldson, Geo. W. Strand and others willingly serving in this capacity.

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As usual the outskirts of the hall were occupied largely with exhibits of plants by the florists of the Twin Cities. The usual show of flowers, renewed in part from day to day, was maintained throughout the week. It is not too much to say that for neatness, order, beauty of decoration and general arrangement throughout the hall the effects have never been more pleasing than this year, and judging by the remarks of the thousands who visited the hall and their exclamations of delight, there must have been a general satisfaction with its appearance.

View across center of hall to fruit exhibit in northwest part of hall. Jewell Nursery Co's exhibit at left; Ferris wheel in center of picture.

There were a few visitors from abroad whose presence was noted by the writer, Prof. C. B. Waldron, of Fargo, horticulturist at the North Dakota Experiment Station, spent some time with us and was very welcome. We were surprised and delighted to meet one who for eight years occupied the presidency of this society, though now for a quarter of a century his home has been in California, Mr. Truman M. Smith. During the first twenty years of the life of this society he was

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a prominent member, and no one is held more in loving remembrance —and, considering his age, eighty-four, in veneration—than is Truman M. Smith. A sad errand brought him east with the remains of his wife, and as he returns to California shortly we are not to have the pleasure of meeting him again soon. A visit with him by his old chum and near friend, Mr. Wyman Elliot, and a very few others whose memory of the association goes back that far, contributed to make his short stay with us a pleasant one.

There is a lesson in connection with exhibiting fruits and flowers that may well be heeded by those who take part. Promptness in preparing and setting up the exhibit, care and selection of varieties shown, neatness in handling and a close application to details in connection with the entries made and an earnest sense of the necessity of doing along all of these lines the very best possible, altogether constitutes a means of education that is by no means to be overlooked by those who participate. The opportunity of social intercourse, the exchange of thought and experience by the exhibitors, is also one of special value, and the presence of these exhibitors in the hall adds greatly to the value of the display. Dear reader, if a fruit or flower grower and not heretofore an exhibitor, you should consider seriously taking up this work with us another year and get the benefits other than financial that come with it, not overlooking the fact that most exhibitors also are liberally paid in premium money for their efforts.

A full report of the premiums awarded in this department are to be found in this or a subsequent number of our monthly.

Store Celery in Cool Cellar.—Now that you have the crop grown, care must be taken not to spoil it in harvesting and storing. The digging of the celery should be deferred till the latest date possible. If it can be left till the afternoon of the last warm day, when you see that a sharp freeze is at hand, so much the better. With a tile spade or shovel, dig under the plants so as to cut off the roots one or two inches below the leaf stalks. Pull off all the small, half grown stalks from the outside of each plant.

If you have a cool cellar with an earth floor, take the celery there and set it up straight, throwing a little earth against the roots of each row as it is set up. The ground should be damp, but not soaking wet. If too dry, water the ground before packing. If celery is very dry as it comes from the field, dip the roots in a pail of water as you set it up. Pack rather loosely, but not so loosely as to sag over one side. The temperature should be as near the freezing point as possible. If cellar has a brick or cement floor, a little earth may be brought in, or the celery may be packed in boxes in the field by putting a little earth in the bottom and packing as above. Boxes should be about as high as the celery. These can be carried and stored in the cellar.—T. C. Smith, Wis.

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A Woman in a Vegetable Garden.

MRS. D. W. C. RUFF, PRES. MINNESOTA STATE ROSE SOCIETY, BALD EAGLE LAKE.

My having a vegetable garden came as a surprise to me—a gradual surprise, which was not complete until I found myself alone among the vegetables.

When we lived in the city of St. Paul, by much coaxing, I induced my husband to make me a small flower bed. By much scheming on my part the next two years saw my flower garden growing in size, with my husband's interest growing also. About that time we moved to our summer home at one of the lakes.

Perhaps owning several acres of land made my husband think that he could devote more space and time to a garden, for he planned to grow all our vegetables in addition to fruit and berries, my part in the plan being that of helper and secretary, for it fell to me to make out his list of vegetables. I remember he was most particular about these seed lists, telling me to order Country Gentleman corn, blood beets—be sure that they were blood beets—and red radishes with globe shape and white tips.

The next year a friend advised us to grow Black Mexican corn, or a black corn, giving us the seed. With many misgivings we tried this corn, but later we were delighted with the delicious, sweet kernels, overlooking its unattractive appearance. We then and there decided to always grow Black Mexican corn. We still grew the same kind of beets and radishes.

We were getting deeper into horticulture by this time, our interest in berries and apples as well as roses and grapes taking us to the summer meeting and the state fair. A very pleasant neighbor, living at Birch Lake, grew dahlias, and his success completely won my husband away from the vegetables. That winter my surprise began to grow, for here I was writing blood beets all by myself, getting help only on the quantity of seed necessary, for you see our vegetable garden was growing smaller, and our dahlia and gladiolus garden larger. Having to order all these vegetables by myself, I ventured into the novelties. Burpee's wonderful bush limas attracted my attention, Golden Bantam corn and a new cucumber called Famous.

These vegetables were tried with very gratifying success, the bush limas winning me first prize at the state fair. What better results could one wish—the joy of seeing those bush beans with the blue tag?

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I speak of this because it was one woman in a vegetable garden securing these results.

I had help in the planning of the garden, but the past summer my surprise was complete, for I found myself alone in the ordering of seeds, in the planning where to plant these seeds, and in the only part of the garden left to plant them—away off on a hill, for the rest of the garden was given up to dahlias, more dahlias, gladioli, and my original flower garden with the roses. But my husband had forgotten the vegetables, for he is completely given up to flowers and, mind you, with more enthusiasm than I could ever muster. I dearly love flowers, but when my enthusiastic friends visit the garden I cannot keep up with them, so my partner discusses the varieties of dahlias, dwarf and tall, and I devote myself to growing prize onions.

What a good time I had last winter studying the vegetable lists! It was like discovering a new pastime.

As delegates of the Minnesota State Rose Society, the secretary and myself attended the agricultural society's annual meeting last January. I knew very little about onion culture. During those meetings we heard Mr. Gibbs' paper on onion growing and Mr. Libby's paper on potatoes. My onions had never been a success—little bulbs which I had carefully covered to keep them from sunscald. Those bulbs did try too hard to push above the soil.

On hearing Mr. Gibbs' remarks I found out two grievous mistakes I had made, one of keeping them covered, not allowing them to push up and spread out, and the other of growing them too thickly and thinning out as I cared to use them for the table. Now, Mr. Gibbs advises thinning out at the second weeding, growing not thicker than eighteen to the foot and keeping the soil well stirred and well weeded. By following his teachings I was successful in winning another prize at the state fair this year. You see I am determined to speak of my successes, for here was one woman competing against all those professional gardeners.

I tried cultivating my onions after the new onion culture method of transplanting. This is the best way for private gardens and the farmer's wife. The new method is a fine way of getting ahead of the weeds, if started early in the house or in a greenhouse—if you are so fortunate as to possess one. I started mine in the kitchen in boxes, later setting the boxes in a cold frame, in late May transplanting them out in the open ground. Meantime the ground in the onion bed can be worked and worked until the onion seedlings are ready to set out, when from about two to three inches high. Mr. Gibbs

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does not advocate this method for Minnesota for gardeners raising onions commercially; he thinks the cost of labor too great for the price received per bushel, but he hasn't tried it. I wish he would and grow those lovely big ones equal to Spanish onions.

He brought home to me the fact that onions must be as carefully grown as my pet flowers—and to think, the onion is a biennial and as interesting as the foxglove! Onions started in April weighed over one pound the 27th of August, the time they were all dug so as to cure properly.

Mr. Libby said "cut the potato in pieces containing one eye." A friend gave me a very large choice potato, which was cut into twelve or more pieces. They were placed in a basket of earth, and sprouted and then set out in a special bed to grow for seed. They came up well and grew to over a foot in height, but alas! my partner came along with his spraying machine—for you know this was a great year for spraying, he was continually spraying. After spraying the roses with a tobacco extract he happened to pass these pet potatoes, so gave them a little attention. That spoiled most of those potatoes, but I still lived in hopes, if the tops were sad looking tubers may have formed, not large perhaps, but still good sized potatoes. When dug most of the vines had little tubers, one to a vine, about the size of walnuts. So I found that we should have to be careful of these homely vegetables, and that all vegetables need as much careful thought as the more showy flower garden.

The joy of raising a white cauliflower, pulling the leaves up and tying them to secure a good, clear, white bleach, was as great as seeing my fine hollyhocks bloom. The successful raising of the vegetables from the warmer south, such as egg plant, lima beans, okra, makes the vegetable garden attractive. They need a warmer soil, rich in compost, well mixed with the soil, not planting them out too early, for if planted in June they grow so much faster in the warmer soil. My okra seed planted in April did not come up at all, but seed from the same packet grew rapidly when planted in June.

Right here, I might speak of growing vegetables for succession. The beds for the later vegetables are not in use during April and May—where spinach or lettuce or radishes could be planted. The April, 1908, planting number of the "Garden Magazine" gave a list of vegetables for later plantings for succession, which I tried, securing string beans September 27th, from July sowing; also, the last of October enjoying young beets and onions from sets and young green peas in September. To secure these, the dwarf early peas must be planted in July.

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The dwarf early varieties of all vegetables are best for the later sowing, for they must be quickly grown to escape the frost—in the spring they do best before hot weather; so they seem to be always in a hurry, like the gardener working with them.

The growing for succession may sound complicated for the farmer's wife, who may have much pressing work, but it is not much more work, for the planning can be done at the same time the other vegetables are sown.

In April plant spinach where you wish your late corn or tomato plants to be set. Plant radishes as markers when planting parsnips, as parsnips are slow in germinating.

Plant onion sets in a bed which could be planted to turnips, and new spinach where later okra could be raised. In among the spinach seed place okra seeds one foot apart later. The spinach—or lettuce, if preferred—will be gone, and then the okra will have space to develop.

Set kohlrabi where late corn or pepper plants are to be set. Beans can be planted often, letting the early plants go to seed, thus securing beans for winter use or as shell beans.

Carrots may be placed two to four weeks apart till July, and thus the busy wife secures young carrots for soup or salad.

Cress, or peppergrass, is liked by many, which can be used as an early vegetable, as it quickly runs to seed.

Several plantings of cucumbers must be made, to keep up a succession.

Let me tell you of a novelty well worth trying, the new lemon cucumber—just the shape of a lemon—to be used as it starts to turn yellow. Peeled and sliced the true cucumber is seen, much more delicate and firmer than the older sorts. Burpee's Famous is another fine variety.

Radishes which went to seed supplied us with radishes the first part of November, of good size, crisp and firm. Swiss chard planted early gave us a delicious vegetable all summer long.

It is not necessary to plant squash but once unless only a few plants are needed; then plant a second sowing two weeks later; the first planting can be started in berry boxes in a cold frame or in the house, setting them out in late May.

Do try raising the English varieties of squashes—the English vegetable marrow and the Boston marrow. Other summer squash dwindle into insignificance when compared with these rich and dryer varieties. The vegetable marrow has the shape of an over-

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grown cucumber; the Boston is round, like Hubbard squash, of a cream color, later turning yellow. These squashes are at their best when picked young, half grown. Wipe off carefully, cut into slices through the skin and the seeds, which are then boiled in salted water for half an hour; lift into a dish, without mashing, dust with pepper and butter. After using these squashes you will scorn the scalloped varieties and the crookneck.

One word about corn. We like Black Mexican for medium and late, but when dipping into the novelties tried Golden Bantam, an early and perfectly delicious corn which can be used for succession, planting in July to use in September and October. A worm often attacks late planted corn, which becomes very troublesome. I have not studied the question enough to offer a remedy.

Two tables of vegetables at the National Flower Show in Chicago, last month, fired my ambition for another year: Crosby's Egyptian beet, as red or redder than the old sorts; perfectly smooth salsify, with no bunchy roots on the sides; cardinal forcing radishes; Ohio yellow globe onion; cream, crinkled cabbages arranged as beautiful table decorations, which attracted as much attention as the bride's bouquets.

Try and secure the finest vegetables you know or hear of, staple, tried varieties, grown by seed houses who have a reputation for reliability to maintain.

There is such a difference in the varieties of lettuce. We find early curled Simpson the best to plant in a hotbed early in April, black seeded Simpson for later, and the black seeded Tennis Ball for June and later sowings. This is by far the best lettuce, as the heads are small, well bleached in the center, of a smooth texture, and resist the sun's hot rays. In October this variety was growing well in my garden, the leaves three inches long.

The soil for the vegetable garden must be well prepared, plowed in the fall if possible, the onion bed well enriched, then well worked in the spring or at least well stirred before planting the seed.

Secure a wheel hoe of Planet Junior make and a new tool called a hand cultivator, with fine teeth. Then with a practical dress, like Mrs. Henry A. Boardman's, a woman can care for and be successful in a vegetable garden.

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SECRETARY'S CORNER

State Fair Awards on Fruits and Flowers.—It has been found impossible to publish the list of awards in the horticultural department of the state fair in the Occtober number without delaying its issue at least a week. On that account it has been decided to defer it to the November number, when the full list, including the pro rata awards, will appear.

Meeting of the American Breeders' Association.—This national organization, of which Prof. W. M. Hays, assistant secretary of agriculture, is secretary, is to hold its annual meeting at Omaha, December 8-10. There are to be many practical addresses on subjects pertaining to the work of the society, some of which will be illustrated with stereopticon views and moving pictures. This society would like to send a delegate to that meeting, and if any of the members purpose attending, will they please correspond with the secretary in regard to it.

National Horticultural Congress.—This organization will hold its annual fair at Council Bluffs, Ia., Nov. 15-20 next. Premiums aggregating $35,000 are advertised for fruits, vegetables and flowers to be displayed at that time. We hope that many of our members will see fit to exhibit at that place and secure a share of the premiums offered and help to uphold the honor of Minnesota. The name of Mr. Clarence Wedge, of Albert Lea, appears as one of the vice-presidents. For list of premiums, etc., address Freeman L. Reed, Supt., Council Bluffs, Ia.

John R. Cummins in Europe.—Postal cards are coming into this office at quite regular intervals from an old life member of our society, John R. Cummins, who since the last annual meeting, has been making a tour of Europe. One received September 16th, dated from Zug, Switzerland, says: "I expect this morning you are at the State Fair; would like to look in on you. Considerable fruit grown here, apples not extra; pears; many seedlings, used for cider; some varieties large and nice; plums mostly gone, but large and fine. In the Zurich market I saw fine Alpine strawberries. Hope to be in Minneapolis the middle of October."

Minnesota Nuts for Fall Planting.—Mr. Henry Husser, of Minneiska, Minn., has a limited supply of black walnuts, hickory nuts and butternuts grown on his place at Minneiska, which he will send by mail to members at twenty cents per dozen, two dozen for thirty-five cents, postpaid, the postage being eight cents per dozen. Orders must reach him accompanied by remittance, not later than October 15th, as after that date Mr. Husser states that the nuts will no longer be fresh enough to be safe for planting. We hope that many of the members will avail themselves of this opportunity to secure nuts of these varieties grown as far north as Minneiska.

Beautiful Apples from Argyle.—On September 16th, a box of specimens of Duchess, Wealthy, Hibernal and Charlamoff apples was received at this office from the orchard of H. L. Melgaard, Argyle, Minn. This orchard, or at least the apple trees at Mr. Melgaard's home in Argyle, have been in bearing now for many years, the writer having seen them in fruitage some six or eight years ago. The specimens received are of extraordinary beauty, and we understand the trees have yielded a large crop this year. Mr. Melgaard's successful experience ought to be a great encouragement to those living in that part of the state His place is in the Red River Valley, some fifty miles south of the state line.

Special Premium for Winter Meeting.—It has been decided to change the form of the premium as offered last year for boxes of apples and make the offer for this class of exhibits, to be displayed at the coming winter meeting, as follows: A premium of $25 will be divided pro-rata among the exhibitors of bushel boxes of Wealthy apples, and a further premium of $25 will be divided

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pro-rata among the exhibitors of bushel boxes of any other variety than Wealthy, including seedling apples. Only one variety, however, can be shown in a box. Bushel boxes of the standard size must be used. Awards will be based on the quality of the fruit, packing, etc., and the fruit itself will become the property of the society and subject to disposal by the meeting. We hope to make a large and choice display of apples in boxes.

Death of Ex-Pres. Truman M. Smith.—In the account of the state fair, found in this number, reference is made to the meeting there of Mr. Truman M. Smith, ex-president of the society. Mr. Smith came to the fair apparently in good health and strength but later in the week complained of having taken cold and expressed a purpose to return immediately to California. On Sept. 20th. Mr. Elliot telephoned to the writer asking if he would not go to St. Paul with him to attend the funeral of Mr. Truman M. Smith, who had died from some lung difficulty two days previously. This was very much of a shock to us, as Mr. Smith, notwithstanding his advanced age, seemed to be in good health and with the prospect of some years of life yet. Further details are not in possession of the writer.

Save Fruit for the Winter Meeting.—Are you saving, either at the cold storage in Minneapolis or in your own cellar, specimens of fruit for the annual exhibit of the society at its December gathering? Two or three hundred dollars will be offered as premiums on that occasion, and we are especially desirous of drawing out a large and elegant display of Minnesota's choice fruit. The season is yielding apples of unusually fine appearance, size and quality, and there ought to be no difficulty in making this the finest exhibit the society has ever made. Do not leave this for some one else to do, but planning to be with us at the annual meeting save at least a single plate of the choicest specimens of every variety growing on your place, and if necessary send to cold storage here in Minneapolis for preservation. Tags to be used for this purpose can be had promptly of the secretary upon request.

Program for the Annual Meeting.—The coming annual meeting of the society will be held, commencing December 7th and continuing four days, in the First Unitarian Church, in Minneapolis, the same place where we have met now for a number of years. It is especially well fitted for the purpose, and it accomodates nicely the increasing attendance at these annual gatherings. The program, for what we believe will be the most interesting meeting the society has ever held, is now rapidly taking shape. There will be special sessions or parts of sessions for the Plant Breeders' Auxiliary, the Minnesota State Rose Society, the Minnesota State Forestry Society, the Minnesota State Florist Society and the Woman's Auxiliary. There will be two or more stereoptican lectures, one by the assistant secretary of agriculture, Hon. W. M. Hays, who will be with us on the first day of the meeting and deliver, late in the afternoon, an illustrated talk on the general subject of "plant breeding". None of our members interested in new plant creations, whether fruits, flowers or what not, should fail to be in attendance at this session and hear Prof. Hays and the rest of the program, which will, you may be sure, be a rich one. There will be a repetition of the very successful "question and answer" exercises preceding many of the meetings, led by those especially familiar with the subjects taken up. Practical lessons in grafting, cross-fertilization, etc., will be continued.

The secretary is looking for hints in the direction of improving the program from the members of the society, and will be glad to hear from any one along this line. Such suggestions are used as far as possible, either now or later. Many good things, however, are crowded out by the fullness of the program. It is to be an especially diversified program, and the subjects taken up, changing from one phase of horticulture to another, will fully relieve and prevent any tediousness on the part of the hearer.

Dear member, plan to be in attendance at this four day's meeting from beginning to end! The first session is one you cannot afford to miss, and the last will be nearly the best of all. Bring the wife along—she needs a winter vacation as well as you—and some of the younger members of the family; and even if you cannot come, send the young people! It will broaden their lives, give them much practical information and increase their interest in horticultural work about the home.

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THE FRUIT AND FLOWER EXHIBIT AT MEETING OF THE AMERICAN POMOLOGICAL SOCIETY, SEPTEMBER, 1909.

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THE MINNESOTA HORTICULTURIST

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American Pomological Society, Biennial Meeting, 1909.

A. BRACKETT, EXCELSIOR, DELEGATE.

I left Minneapolis Saturday night, the 11th of Sept., on my trip to St. Catherines, Ontario. The part of Wisconsin I traveled through by daylight I saw no apples, but just beyond Milwaukee I saw thousands of acres of cabbage growing. The part of Illinois I traveled I saw no apples; after getting into Indiana, about sixty miles from Chicago, saw the first peach tree loaded with fruit. All the country I passed through was very dry. The western part of New York has thousands of acres of vineyards, and the growing of grapes seems to be their chief industry. Saw some fine old apple orchards, very large old trees but almost all devoid of apples. There seemed to be a very large crop of plums and quite a few acres of raspberries, but they don't seem to grow like they do in Minnesota. The corn crop in that part of the country seemed to be principally stalks, and they were not very tall. I spent Monday forenoon at Niagara Falls, and it more than came up to my expectations.

Arrived at St. Catherines Monday P. M. It is a city of about 12,500, a very pretty place. It is called the "garden city"; the streets are lined with horse chestnut trees and the homes surrounded with flowers and shrubbery. Potatoes were not very plentiful and were selling at 80c per bushel.

I met Mr. Hart, of Hawkes Point, Florida, an orange grower, a brother-in-law of A. T. Morse of Excelsior; also Mr. G. L. Taber, of Glen St. Mary, Fla., a nurseryman and orange grower. Mr. Painter and family came all the way from Jacksonville, Florida, in an automobile, 2,900 miles, to attend the meeting. There were fruit growers there from nearly every state in the union and a good part of Canada.

The meeting opened at 7:30 P. M., Tuesday with the following speakers: Opening by Pres. Goodman; prayer and music; welcome by the mayor of St. Catherines. A large key, about three feet long, made of wood and gilded and decorated with the red, white and blue ribbons, was presented to the society, in behalf of the people. It

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was supposed to be the key to the city. Then another welcome address by the Honorable James Duff, welcome on behalf of the fruit growers by E. D. Smith; then Col. C. L. Watrous, of Des Moines, responded for the society. He made a very happy speech, the gist of it being along the Kipling line: "We be of one blood, ye and me; we feel at home," he said, "in this beautiful city and country. You are English, Scotch and Irish; so are we." Then we had an address by Dean Bailey, of the New York State College of Agriculture. The Honorable James Duff told of the fruit sections in that province. Along Lake Erie shores they grow peaches and grapes; they have an area of 12,000 acres of grapes. North from Lake Ontario to Georgian Bay is the apple district. McIntosh Red and the Fameuse are the leading varieties. They grow quantities of the large plums, such as the Lombard, the Bradshaw, the Magnum Bonum and other varieties. Mr. J. Van Lindley talked on commercial peach growing in the south. He seemed to be very successful, as he had sold this year $43,000 worth of peaches. He sprays often with the lime sulphur spray, six or seven times a season, and then goes over all his trees and thins out the fruit, leaving each peach the right distance from the next one, and when he gathers his crop they are all of a uniform size, and he has no culls.

Mr. White, of Ottawa, exhibited seventeen varieties of English gooseberries, some of which were very large. One variety, he claimed, averaged almost one ounce in weight. He does all of his cultivating in the fall and never stirs the soil around the bushes in the spring.

The average attendance was from 75 to 100. The fruit display was held at the armory building, four blocks from the hall, in connection with the flower and vegetable display from that locality and drew a crowd, many of whom attended the meetings. At the close of the afternoon meeting the committee passed around baskets of their home grown peaches, which were very fine.

Thursday morning we had talks on sulphur sprays. They claim they cannot grow peaches successfully without the lime sulphur spraying; it is as valuable to the peach grower as the bordeaux is to the apple grower.

Thursday afternoon there was no meeting, as the committee had planned an excursion to Grimsby Park and Stony Creek by trolley, which runs through the fruit belt. The cars stopped first at the home of Mr. Fleming, who has a most beautiful home and a peach orchard that is in perfect shape, fruiting heavily. He bought the place two years ago, paying $12,000 for nine acres. The next stop was at Mr. Smith's peach and apple farm of 300 acres, which was well kept and

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had an immense crop of peaches, pears and plums, which they were picking and packing, most of which were going to western Canada. The Elberta peach seems to be the most productive and the best paying. On our excursion we were kept constantly supplied with the very best quality of peaches and grapes. The company consisted of two large trolley cars full of people. This country is cut up into small farms of from five to ten acres as a rule. Each farm has a good house and a well kept lawn and everything in good repair, showing that the country is prosperous. The peach belt lies between the hills and the lake. We also visited the canning factory, and the day we were there they had put up fifteen cars of grapes. They were canning

Another view of fruit exhibit at American Pomological Society meeting.

and making jams and jellies of grapes, peaches, plums and pears. The peach belt is a level tract of sandy soil and has to be fertilized heavily. They use from ten to fifteen tons of stable manure per acre each year. The peach orchards are kept under thorough cultivation; they use an extension disk harrow, so they can cultivate close up to the trees. We saw a great deal of the Canada thistle, and it seemed to be at home.

We were delayed in getting back from the excursion, and the evening meeting had to be shortened somewhat. Col. G. B. Brackett gave a good talk on adaptation of varieties to soil conditions. Mr. John S. Collins gave a talk on the oriental pears and their hybrids;

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he planted a pear orchard and after waiting twenty-five years he was rewarded with a crop of 100 car loads, and he said the trees had borne well ever since.

Friday morning Mr. F. T. Shutt, chemist at the experimental farm at Ottawa, had a very good paper on effects of various cover crops on amount of soil moisture; the talks and papers were all very interesting and instructive.

Friday afternoon we were taken on another excursion in automobiles, passing through several peach orchards, where we were invited to stop and help ourselves. We stopped at old Niagara on the lake, at Doyle's Hotel, where lunch was served to all. Then along the river road past the Larkin farm of 1,000 acres—the Larkin's soap man; then on to Mr. Armstrong's peach orchard, where we were invited to eat more peaches; then on to Queenstown's Heights; thence back to St. Catherines to the hotel again. So ended a very pleasant trip.

The Canadian people certainly are great on entertaining visitors; they make you feel as if you had always known them and were one of them. They had another excursion planned for Saturday to Guelph and other places of interest, but I did not stay to take that in, as I had to start for home Saturday morning.

The fruit exhibit was very fine. There were 500 plates of grapes and about the same of peaches; about 300 plates of apples and hundreds of boxes of peaches and plums. The floral display was grand. The asters were magnificent. In fact the display of flowers was superior to anything I had ever had the pleasure of seeing. The apple orchards were all old trees, no newly planted orchards to speak of; the grapes, and plum and peach orchards were all under thorough cultivation, but they do not cultivate the apple orchards. They are not troubled with fire blight in the apple orchards, but I saw a great many pear trees that were destroyed by blight. The thermometer seldom goes as low as 10 below zero. I do not think I saw any locality in which they are growing apples as profitably and as well as they can be grown in Minnesota.

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The Dahlia.

D. W. C. RUFF, ST. PAUL.

The dahlia possesses a happy, easy-going disposition and readily adapts itself to almost any soil or situation except dense shade and wet, sour soil, and, while it loves a sunny situation and revels in sandy loam, yet with proper cultivation it will do well and give satisfactory results in partial shade and on heavy clay. I think perhaps the finest blooms I ever saw were grown on heavy clay, but for convenience in cultivation and digging I prefer a light soil—and bear in mind, especially, that cultivation is first in importance and without it success cannot be assured.

The soil in which the dahlia is grown should be thoroughly prepared by spading or plowing, the deeper the better. If it is a light, sandy soil, give it a liberal dressing of well rotted stable manure at the time of plowing; if heavy soil or clay, coarse bone meal is best. They do not need too rich a soil, and are often ruined by being overfertilized. A heavy dressing of air-slaked lime is very beneficial to soil inclined to be wet.

Planting should not be done too early and never when the soil is wet. May 15th to June 1st, depending on the season, is early enough in this climate, and June 15th is not too late for best results. Most varieties will bloom in sixty to seventy-five days after planting dormant roots. Plant single tubers for blooms, and lay them on their side in a horizontal position, not vertical. Cover to a depth of five or six inches and press the soil firmly over the tubers. Do not plant closer than three to four feet. I plant in rows four feet apart and three feet apart in the row.

During the growing season the dahlia will resent extremes of either wet or dry, so the happy medium must be applied; but after coming into bloom, it is a heavy drinker, "a regular toper," and for this reason proper judgment in watering is not always used, and it is often abused and greatly injured by constant drenching during the growing season, which accounts for many of the failures in growing this plant.

As soon as the sprouts appear above the surface, start the hoe and cultivator, and this work should be thoroughly done and kept up until the first blooms appear. Light cultivation is better than deep, especially just before the blooming period, and an ordinary steel garden rake is an excellent tool to use at this time. As soon as blooming begins all cultivation should cease, and a heavy mulch of coarse, strawy manure or straw and litter be applied.

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When the sprouts are a few inches above ground, I select the strongest one and break off all others, growing only a single stalk, which is tied to a short, stout stake. A little air slaked lime or poisoned bran placed on the surface and around the sprout at this time will protect it from the cut worm. Tall growing varieties may be dwarfed and benefited by pinching out the top from the plant when about six inches high, but some varieties which are inclined naturally to grow thick and close would be injured by this treatment; therefore one must be familiar with the variety in order to successfully practice this part of its cultivation.

Dahlia, Grand Duke Alexis.

The dahlia derives its name from the Swedish botanist, Dr. Dahl, but for a time it was known under the name of Georgina, after Prof. George, of St. Petersburg. It is a native of Central America and Southern Mexico, and was known by the Aztecs and aborigines under different names. It was first described in a book on plants by a Spanish physician in the year 1657 and is the species from which most if not all of the present varieties originated. At that time it was only known as a botanical plant, and we have no further history of it for 130 years, until 1787, when a Frenchman published an account of the dahlias he had seen growing in the gardens in Mexico. Two years later, in 1789, seeds were sent from the botanic gardens of Mexico to the royal gardens at Madrid, Spain, where it was given its present name, dahlia. This lot of seedlings were lost two years later, as were several other lots. But their stay, though brief, awakened an interest in the plant and its possibilities, and further attempts at its cultivation were then made in several European countries, and it soon became a popular flower.

Great difficulty seems to have been encountered in learning how to keep the roots over to the next season. Up to this time all the varieties were single, the first double appearing in 1814, which was

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secured in the crop of the third generation from planting northern grown seeds. A theory gives this answer to the question which naturally arises here, why should northern grown seeds produce double flowers? Nature, always alert to perpetuate itself, throws out extra petals to protect the tender seeds. Be this true or not, certain it is that double varieties show a tendency in warm climates to become semi-double, and single varieties in the north are hard to keep in true form.

The cactus dahlia was originated in Mexico in 1872, but not placed on the market till 1880, when it was sent to an English florist, who

Gardens of D. W. C. Ruff, at his summer place, Buena Vista, Bald Eagle Lake, Minn.

exhibited it in his window, where it attracted a great deal of attention. Although a chance seedling, it was of fine form and color. From this chance plant has descended the type that has held for years, and is still holding, the center of the stage of our modern dahlia.

But I believe the cactus dahlia is now in danger of soon being overshadowed by the extreme beauty and loveliness of the new Holland peony-flowered dahlia, which has so suddenly bounded into popularity. Whenever I hear a lover of flowers say, "Oh, I don't like or don't care for the dahlia," I know he has in mind the old fashioned sorts, and that he has never seen the beauties of the cactus type, the new centurys, the peony-flowered dahlias, the French

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colorettes, or the newer giant varieties of the decorative and show types, with their gorgeous blooms measuring seven to ten inches in diameter—such as Grand Duke Alexis, Mrs. Roosevelt, Madame Van den Dael or the monarch of the dahlia field, that glorious giant, Souvenier de Gustave Doazon, which is possibly the greatest of them all for garden effect—and no flower lover in the universe could help but admire and love them.

Last year while on the train on my way to business, I was talking to a friend, who is a flower grower, about my dahlias, when he stated that he never liked the dahlia and had no use for them. I asked if he had seen the cactus and some of the newer varieties which I mentioned. He was not familiar with the names, but thought he had seen them all, and he did not care for any of them. I told him of my newly imported ones, and invited him to come out and see them, and he did so that same evening. And as we passed along row after row of the numerous varieties, he would exclaim, "Oh! how beautiful! how lovely! how charming! I never saw dahlias before." And when we reached that exquisite white Holland peony dahlia, Queen Wilhelmina, and then the red and white Paul Kruger with their nine inch blooms and twenty inch stems, he was simply overwhelmed, and said he could not find adjectives enough to express their beauty. And as he passed from the garden with that pearl of the dahlias, a Queen Wilhelmina, in his hand he said, "This is the most beautiful flower that I ever saw."

The peony dahlia was originated only two years ago, in 1906, and in 1907 was grown for the first time in the United States. We had but a few varieties of this type that year, but the past season we added the new ones and had a fine display of them. We are now importing direct from the originators in Holland the new varieties of 1908, so that next year we expect to have the whole twenty-six varieties of this new type, which includes them all to date. In giving vent to my enthusiasm for this beautiful flower, the modern dahlia, with its multitudinous phases, which will satisfy our artists, the whims of the flower crank, the notions of the old fashioned gardener and the exacting demands of the connoisseurs, I claim more valuable points in favor of this queen of autumn than can be urged for any other flower in existence. No other flower in the universe possesses such a boundless range of color today, and I have yet to find a flower which can arouse an equal amount of spontaneous enthusiasm and admiration.

Few flowers are easier of cultivation than the dahlia, and for garden effect, for cut blooms, for landscape work, for exhibiting in

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our horticultural shows, the dahlia has no peer during its season of blooming; and for centerpieces and table decoration, the cactus and the new century dahlias are becoming very popular. No other flower appears in as many distinct types as the dahlia does, and every year we read of the introduction of new classes, and nowhere is the field of scientific research into the mysteries of nature more easily accomplished than among the dahlias. No plant can be so rapidly increased by those without experience, and the creation of

Dainty, a cactus dahlia.

new varieties is more easily accomplished than with most any other flower.

This queen of autumn, the dahlia of today, is destined to become the most popular flower of America. Notwithstanding the strides it has made in popularity in other countries, the dahlia is still practically unknown and unappreciated by most of our people in the northwest. A few enthusiasts here and there have fair collections containing some of the new varieties, but in most yards where grown at all the old show varieties still prevail. It is in New England and the

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eastern states where the greatest interest in this country is shown in its culture. But on the Pacific coast, where it is said that the finest dahlias in the world are grown, it has received the greatest honor ever bestowed upon it by having one of its most beautiful types, the cactus dahlia, chosen as the official flower of a great international fair, the Alaska-Yukon-Pacific Exposition, held in Seattle in 1909. A dahlia club has been organized in Seattle to promote its cultivation. and the press of that city is giving it much publicity. Seattle will deck herself in dahlias, while the splendid displays upon the exposition grounds will give to the thousands of visitors a new conception of its beauty.

The following is a list of good varieties which I can recommend: Standard Bearer, Floradora, Gloriso, Countess of Lonsdale, Dainty, Victor von Scheffel, Ingeborg Egeland, Yellow Green, Winsome, Souvenier de Gustave Doazon, Madame Van den Dael, Mrs. Roosevelt, Grand Duke Alexis, Mrs. Winters, G. D. Livoni, Twentieth Century, Scarlet Century, Queen Wilhelmina, Paul Kruger, Glory of Gruenekan.

Mr. A. J. Philips (Wis.): I understood Mr. Ruff to say that he digs his dahlias in the fall, takes them apart and then lays them down in the spring.

Mr. Ruff: I separate the clumps in the spring, but I do not disturb them in the fall, storing them over winter just as dug.

Mr. Philips: You take them apart in the spring?

Mr. Ruff: Yes; divide the clumps, planting only single tubers or toes.

Wyman Elliot: You are sure you have a bud in every tuber?

Mr. Ruff: Certainly; do not divide the clumps until the eyes begin to swell or sprout; then you can be sure of getting an eye with each tuber.

Mr. Underwood: Tell us how you keep the tuber.

Dr. H. M. Speechley (Man.): The growth of the dahlia in the northwest on our side of the line is considerable, and makes a very good show every year. Our season is rather short but that does not stop us from having flowers the same season.

Rev. C. S. Harrison (Neb.): Do you not have trouble in wintering the roots?

Dr. Speechley: Yes, but not often.

Mr. Ruff: I suppose there is a difference in wintering in a small way and in a large way. In handling them in small quantities it can be done in the same manner as other bulbs are kept. If a person has only a few roots, dig them and turn them upside down and leave them on the ground a few hours during the middle of the day to dry off; a few hours will do. After they become dry take them in and place them upside down on the cellar floor, where they will not freeze, giving them about the same conditions you would give pota-

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toes. A few can be placed on the bottom of the cellar in the above manner, and to prevent them from becoming shrunken cover them with sand or soil and keep them dry. For large quantities this is not practicable. In digging them myself, as I dig them I turn them upside down allowing them to dry. Then I put them into barrels, turning the stalks or tops down in the barrel. These barrels should be put in a cool place, but they must not freeze. The best temperature in which to keep them is in the neighborhood of 35 to 40, not colder than 35, for best results, and in a place where they do not dry up. In wintering them in that way, keeping them in barrels, I can get practically the same results as I can get with potatoes kept in the cellar.

Mr. C. S. Harrison: Do you put anything in the barrels, chaff or anything of that kind?

Mr. Ruff: No, sir, I do not put anything in. In filling the barrel I let them come up to within about four or five inches of the top, put a few leaves over them and then cover with burlap to prevent them from drying up. I would not advise packing in chaff; I would be afraid they might rot.

Mr. G. D. Black (Iowa): I raise a great many dahlias and find that some kinds keep better than other kinds. I have some that have been in the cellar two winters, and they have commenced on their third winter. I left them in by mistake, and they bloomed and made perfect flowers. They are still alive, they bloom in the cellar, but the cellar is light.

Mr. Ruff: Some varieties winter better than others, and the condition of the soil has an effect on the tubers.

Mr. S. D. Richardson: I would like to know how to plant dahlias where you have to plant them in the wet. Last year all we had to do was to tickle our highest ground with a hoe, and we had a flowing well.

Mr. Ruff: Well, under those conditions you can't have success.

Mr. Richardson: Yes, we can, we had some fine ones.

Mr. Ruff: Prize blooms could never be obtained under those conditions, and except on the highest knolls the tubers would rot in the ground.

Mr. A. J. Philips (Wis.): I want to ask a foolish question. My wife has an idea that after the root of the dahlia has been cultivated a number of years it will turn yellow, and next year the flower will be yellow. Is that a fact?

Mr. Ruff: I don't think so.

Mr. Philips: I don't either, and I want to tell her that when I get home. (Laughter.)

It is Never Advisable to plant fruit trees in fresh sod. In such cases the land should be broken, preferably a year in advance, and used for some hoed crop during the preceding summer. If this is not possible, the sod should be turned during the preceding August to permit of its decaying before planting it.

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Legal Protection for Planter and Grower.

WM. T. COE, ATTORNEY, MINNEAPOLIS.

It is the purpose of this paper to discuss briefly what may be done and is being done to protect by law the planter and the honest nurseryman from the incursions of the predatory seller of worthless nursery stock. It is not my purpose to criticise nurserymen, but rather to point out a few dishonest nursery practices and suggest a remedy if possible. It is not fair to condemn nurserymen any more than it is fair to condemn lawyers, doctors, merchants or any other class or profession. It should be the purpose of the law to discourage dishonesty in every form. This is an era of reform, and dishonesty even in high places is condemned on every hand. Honesty is fashionable.

Horticulture owes more to the nurserymen than to any other class. Many nurserymen are horticulturists and scientists of the first order, and are men of the highest character and integrity. They are entitled to protection in their calling.

Other things being equal every planter should patronize so far as possible the nearest responsible nurseryman. This is not only good neighborship but is common sense and good financial policy. It is to such person's interest to sell reliable stock, because if he does not his reputation in the community is soon lost, and he cannot long continue in business. Moreover, he is financially responsible and liable at law as it now exists for misrepresentations or breach of warranty as to essential facts concerning his wares. On the other hand, the unknown fruit tree peddler may make any kind of statement he pleases, may get the order on the strength of it and then fill it with any such worthless stock as he may find profitable and convenient to deliver. The buyer will probably not find out for some time after the delivery that he has been cheated—it may be several years. When he does find it out, the itinerant fruit tree vendor has absconded to parts unknown. He does not care to sell in that community again anyway. He has fleeced it to his entire satisfaction. Against this man the planter has no recourse, because, forsooth, he cannot be found. If found in some distant state no redress could be had, for the man is worthless. The planter cannot pursue him anyway, owing to the expense of such a proceeding. Instead, he gives up fruit tree planting and turns his wrath on nurserymen as a class.

Against this malefactor the honest nurseryman and planter alike are entitled to legal protection. The constitution guarantees every citi-

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zen the equal protection of the laws. In theory this is true; in practice it is not. The resident nurseryman *must* keep his word because he is within the jurisdiction of the courts, and if he has misrepresented he can and will be mulcted in damages, and he has property not exempt, which may be seized on execution and the judgment satisfied. Thus the present status of the laws operate to discriminate against him and in favor of his irresponsible and dishonest competitor. To permit these predatory gentry to continue their operations is unfair to the honest nurseryman and the planter and operates to discourage horticulture.

So much for the need of legal protection. But what can be done about it. This is almost as much a practical question as a legal one. Just what restriction you desire should be imposed is for the interested parties to suggest and determine. You must remember one thing: any restriction you impose must operate on all alike, whether they be resident or non-resident, otherwise you will be confronted with the "equal protection of the laws" clause of the federal constitution.

I suggest that you have a law passed, requiring all growers of nursery stock for sale, and their agents and salesmen, to be bonded and licensed. Let the license fee be great or small as seems best. Let the bond be in a sufficient sum to reimburse the planter if he has been defrauded. The responsible and honest grower will not find this requirement irksome or expensive. He has to make good anyway for any of his misdeeds. On the other hand, the irresponsible and dishonest grower and vendor would find some difficulty in complying with the requirement. If he did give the required bond, he could then be reached by an ordinary suit in damages in the local courts, and there would be somebody (the bondsmen) behind the defendant to reimburse the defrauded planter when judgment should be rendered in his favor.

Banks and insurance companies and many other business enterprises come under this wholesome supervision, and the honest ones do not find it inconvenient. On the contrary it is an advantage to them, while the consumer is much benefited by the protection given him.

I am satisfied that a statute can be drafted which if enforced would be effective. Such a law can be made constitutional and come within the reasonable exercise of the police power of the state. It would not bring about a millennium, but it would "help some."

Most of the states have some sort of law on the subject. I am not prepared to render an opinion as to the constitutionality of them

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all. They are divided into two different groups of laws, with reference to the things to be reached. One kind seeks to prevent the shipment into the state and the sale of diseased nursery stock; the other aims at a prevention of dishonest practices. Minnesota has a very fair inspection law (Sec. 2381-2390 of the Gen. Laws of 1905). Under this the state entomologist has power to inspect if he deems it necessary, but the certificate of the proper authority in another state is sufficient to admit stock to Minnesota.

Perhaps some amendments to this law would be wholesome. I suggest that certain ports of entry might be named and all stock forbidden to be admitted at any other points. Then have an inspector at those points who may inspect incoming shipments and certify to them. This is required by the laws of many states. Transportation companies should be forbidden to carry stock not properly inspected. This is required by the law of Indiana. The expense of inspection can be charged to the shipper.

Several states require license and bond. They are Florida, Idaho, Michigan, Montana, Oklahoma, Utah, Virginia, Washington, Wyoming and West Virginia (in the last named state a county license of $10.00 is required). Most of these laws were recently enacted.

I have appended hereto a table which I have made up for convenience showing a resume of the principal requirements in the different states.

TABLE SHOWING LEGAL REQUIREMENTS IN THE DIFFERENT STATES.

State—	Inspection required.	Permit required.	Bond required.	Remarks.	Date of Laws.
Alabama	Yes	No	No	.....	1907
Arizona	Yes	No	No	Refers to palms only	1903
Arkansas	Yes	No	No		
California	Yes	No	No	Tag must bear names of consignee and consignor.	
Colorado	Yes	No	No	County inspectors as amended	1897
Connecticut	Yes	No	No	Fumigation required	1903
Delaware	Yes	No	No	Fumigation required	1901
Florida	Yes	Yes	No	$25 county license fee	1906
Georgia	Yes	No	No	Fumigation required	1900
Hawaii	Yes	No	No	Strict quarantine	
Idaho	Yes	Yes	$1,000	Fumigation required	

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Illinois	Yes	No	No	Certificate where stock grew required 1907
Indiana	Yes	No	No	Name of shipper and receiver must appear 1907
Iowa	Yes	No	No	 1906
Kansas	Yes	No	No	 1907
Kentucky	Yes	No	No	 1907
Louisiana	Yes	No	No	See report of Pest Com., 1907, and law of 1903
Maryland	Yes	No	No	 1898
Massachusetts	Yes	No	No	Fumigation 1907
Michigan	Yes	Yes	Yes	Permit $5-$25.
Minnesota	Yes	No	No	Ch. 237, 1903 Sec. 2381-90 1905
Mississippi	Yes	No	No	Strict fumigation...1908
Missouri	Yes	No	No	Name of consignor and consignee.
Montana	Yes	$25	$1,000	Notice of shipment required by authorities 1899
Nebraska	No	No	No	Local inspections only—no law.
Nevada	No	No	No	No law
New Hampshire	Yes	No	No	Fumigation 1903
New Jersey	Yes	No	No	Fumigation 1903
New Mexico	No	No	No	No law
N. Carolina	Yes	No	No	1897
N. Dakota	No	No	No	No law
Oklahoma	Yes	$5		Evidence of integrity required 1905
Oregon	Yes			Quarantine stations as amended 1905
Pennsylvania	Yes	No	No	Fumigation 1905
Porto Rico	Yes	No	No	Local inspectors 1905
Rhode Island	Yes	No	No	Fumigation 1904
S. Carolina	Yes	No	No	1903
S. Dakota	Yes	$10	$5,000	1907
Tennessee	Yes	No	No	Fumigation 1905
Texas	Yes	Yes	No	1905
Utah	Yes	Yes	Yes	Fees graded $10-$25
Vermont	No	No	No	No law
Virginia	Yes	$10		1903
Washington	Yes	$5	No	1907
W. Virginia	Yes	$10		County license 1907
Wisconsin	Yes	No	No	1907
Wyoming	Yes	$25	$500	Strict 1905
Canada	Yes			Ports of entry.

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Mr. D. M. Mitchell: In regard to this South Dakota law, I understand it has been declared unconstitutional. The South Dakota law does not require a license fee from every salesman, and it does not require anything more than a certificate of inspection filed with the secretary accompanied by a ten dollar fee. That is the sum and substance of the South Dakota law.

Col. Gurney: That is good as far as it goes. That was one of the parts passed upon by the supreme court, that this certificate required the payment of ten dollars could not be construed that it should be applied to all the different seedsmen and nurserymen.

The President: It seems to me that is a good feature to require a deposit of ten dollars.

Mr. Mitchell: There has been no demand in Minnesota for such a law. I think every nurseryman and planter in the state should have protection, but I do not think such a law as South Dakota has is a protection to any one.

The President: You think a measure of that kind would not accomplish anything?

Mr. Mitchell: That is my opinion.

The President: Is it not your opinion that something along that line might be done?

Mr. Mitchell: I am not prepared to say.

Col. Gurney: The only effect was that it favored the humbug; it favored the outside nurseryman and the fakirs; that is absolutely what it accomplished in South Dakota. It gave them a responsibility and reliability they had never known before. (Laughter and applause.) They waxed fat under that law.

Mr. S. A. Stockwell: I am an insurance man, and in an experience of sixteen years in the licensing of insurance men of the state I do not know of an instance where it has eliminated one iota of fraud, but on the other hand it has been a cloak that warded off suspicion. There has been an improvement in the business I am identified with, but it has come from inside of the fraternity; it has come because there has been an awakening to a higher standard of business principles. I would not advise the horticultural society to spend much time with the legislature to get a license law because it will do you no good.

NINETY-FIVE PER CENT of the nurserymen in the United States recommend spring planting of trees, with a few reservations. This is the result of a recent inquiry made by Orange Judd Farmer. The discussion of fall and spring planting is as old as horticulture, but if the opinions of the nurserymen interviewed can be taken as an index of the best practice, certainly fall planting is in disfavor. Orchardists claim that trees set in the spring get a good start before cold weather comes. The root systems become firmly established, and the shock of removal has by that time largely disappeared. The trees are in normal condition, consequently are better able to take care of themselves during the cold of the winter.

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The Pioneer Orchardist, John Chapman—alias Johnny Appleseed.

E. F. PABODY, EXCELSIOR.

The closing years of the eighteenth century witnessed a mighty tide of emigration from the Eastern States, crossing the Alleghany Mountains and flowing into the valley of the Ohio River. We, who live in these days of swift, luxurious travel, can form but little idea of the hardships encountered in these long journeys. Unbroken forests were to be penetrated, deep, swift streams were to be crossed, over which there were no bridges, Indians were concealed in ambush, deadly fevers were to be encountered. But these brave, hardy men were worthy to be the founders of a mighty empire. Each one was looking for the richest, most fertile, the best-watered land, dreaming of a home for himself and his family, where in coming years they would be surrounded with comforts and luxuries. This was a noble ambition, and we rejoice as we read of their grand achievements.

Among these emigrants, there was one man who, in his unique personality, stood alone. His early life is shrouded in mystery. He had no family. He was ever a little in advance of the oncoming tide of emigration. His eyes were the first to look upon some of the richest and most desirable lands in the territory now included in the states of Ohio and Indiana. He could easily have pre-empted these choice lands and in his later years lived a life of luxury. He never owned one acre of land. He, too, had ambitions; he, too, dreamed dreams; but they were all for others and not for himself. The name of this man was "John Chapman." He first appeared in Western Pennsylvania in the summer and fall of 1789. He went among the apple orchards where the farmers were making cider. Here he secured large quantities of seeds.

In 1790 he drifted down the Ohio River in a boat loaded with apple seeds. His plan was to go in advance of the settlers, planting orchards in the wilderness. When he found an open glade in the forest, he dug up the soil and planted thousands of apple seeds, wove a brush hedge about it to keep the deer away, and then drifted down the river to another open glade.

When the early settlers came, they found apple, peach and pear trees, with grape vines and small fruits, growing in the forest. When the trees were of sufficient size, John Chapman went among the new settlers telling them where they could obtain an abundance of fruit trees without money and without price, telling them how such fruit

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would add to the happiness of themselves and their families. It would have been impossible for these emigrants to bring trees from their Eastern homes. Few of them would even think of taking seeds with them. Here they found strong, vigorous trees, ready to be transplanted as soon as their land was cleared. This was the origin of all the early orchards in Ohio and Indiana. This was the disinterested, unselfish, loving life work of John Chapman, continued for nearly forty years, until death overtook him in the forest near the present site of the city of Fort Wayne, Indiana.

Mr. and Mrs. E. F. Pabody, at their summer home at Lake Minnetonka. On the farm of Mrs. Pabody's father, near Oxford, Ohio, was an immense apple tree grown from seed planted there by Johnny Appleseed.

In a recent number of Colman's Rural World, you may find this interesting article:

"In eastern Indiana, hard by the town of Spiceland, may be found a mournful relic of a heroic age. It is the stump of an old apple tree, standing in a small glade, surrounded by a clump of original forest. There is nothing unusual in this. Broken down apple trees, stumps of former fine fruit bearers, may be found on many farms or lingering

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in out of the way places where homes once occupied have been abandoned. So, of itself, the old tree trunk near Spiceland would be scarcely worthy of notice and would attract only a passing glance from the traveler in the vicinity. When its history is known, however, a wealth of associations well up which send the mind wandering to the long ago and stir the imagination to scenes in the far distant past. In fact, the old trunk is the memorial of a man well known in his day throughout the whole western country then settled, and one of the most remarkable characters of the pioneer period. You will pause before the decaying tree trunk when you learn that it was planted more than a hundred years ago by the celebrated John Chapman, better known as "Johnny Appleseed," at a time when there were but few white men in the borders of what is now called Indiana. Though this strange being, the pioneer horticulturist of the Ohio Valley, planted thousands of apple trees from Pennsylvania to the Wabash, only this dilapidated sample remains to recall the story of his benefactions and self-sacrifice.

"All the trees planted by the solitary wanderer of the West were seedlings. Grafting and budding were then unknown in the wilds, and apple trees were grown only from the seed, some of which produced good fruit, while others brought forth an inferior article or, it might be, were entirely barren. Most of them, however, were entirely satisfactory, and practically all the orchards of Ohio and eastern Indiana, which fed fruit to the pioneer children and filled the apple holes for winter, came from the seed planted by the eccentric hermit who devoted his whole life to this work without asking the slightest compensation or reward.

"Trees are perishable things, and the fine orchards built up in the wilderness by Johnny Appleseed have long since passed away. Only this poor trunk remains as a reminder of what he did for his fellowmen and for the cause of agriculture, since so highly developed in the regions where he once roved as a homeless tramp, barefooted and clothed in a gunnysack. He has not been forgotten, however. A fine monument has been erected to his memory at Mansfield, Ohio, and the particulars of his philanthropy, his kindly ministrations and unselfish heroism have been embalmed in literature and history. There are men still living who ate apples from the tree near Spiceland sixty years ago. There is a live sprout from the original tree, and it is hoped it may be preserved and developed as a living memorial of the man who wrought so well for humanity in his day and generation."

Rev. Newell Dwight Hillis, pastor of Plymouth church, Brooklyn, N. Y., has written a very beautiful story called "The Quest of

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John Chapman." Drawing upon his imagination, he has given us, from very meager outlines, a charming picture of the whole life of this pioneer orchardist. Every horticulturist will find real pleasure in reading this book and will acknowledge a debt of gratitude to Mr. Hillis for having written it.

One incident in the life of this man has been made too prominent by some writers, and has given a very wrong impression of his character: About 1815 the orchardist was lost in the forest and suffered probably from an attack of typhoid or malarial fever. Months later when he reappeared on the edge of the settlements, he was dazed and out of his mind—he wore some of his apple-sacks for garments and had an old rusty tin pan on his head. At this time this man, who

Winter view of summer residence of Mr. E. F. Pabody, Zumbro Heights, Lake Minnetonka.

evidently at the beginning of his life was a scholar, entered upon a new phase of his career. For several years he was cared for by settlers who understood their debt to the man whose heroism and courage in carrying on his self-imposed task was quite beyond their comprehension. Later on he recovered his health and again took up his work. Many writers remembering only this tragic epoch in his career, have robbed him of his name and fame by speaking of him as a "strange, crazy old man." He was often poorly clad. He often made long journeys without shoes upon his feet. His was a heroic soul, and he lived above such things. In his devotion to his work, he cared not for his own comfort. There is abundant proof that John Chapman

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was a refined, intelligent, educated man. His religious life was very marked. He accepted religious truth as explained by Emanuel Swedenborg. His life exemplified beautifully the life and teachings of Jesus Christ.

As to his intellectual attainments, one who saw him frequently in her early life has this to say about him: "On the subject of apples he was charmingly enthusiastic. One would be astonished at his beautiful description of excellent fruit. I saw him once at a table, when I was small, telling of some apples that were new to us. His description was poetical, his language remarkably well chosen. It could not have been finer had he the whole of Webster's unabridged with all its royal vocabulary upon his tongue. I stood back of my mother's chair amazed, delighted, bewildered, hardly realizing the power of true oratory. I felt more than I could understand." We long to know more of the life of this very remarkable man.

In closing this paper, some quotations from Mr. Hillis, preface to his story, will give us his estimate of his character. He says: "One fact is surely established: he is the patron saint of American orchards —a man altogether unique and picturesque. Unfortunately, his career is shrouded with silence and mystery. Why he took up this self-imposed task, what power drove him forward through forty years, from what source he borrowed his courage, his endurance and his final victory, through what strength he endured his loneliness and privations, whence were the hidings of his powers—these are questions, it is said, which can never be answered.

"Our nation owes an immeasurable debt to the sons and daughters of the Revolution who crossed the Alleghanies and laid the foundations of the great states of the Ohio and Mississippi valleys. Among the builders of these commonwealths, we must give a large place to the old orchardists—for John Chapman who made possible the apple and peach orchards of the interior states; for Thomas Bull, who gave us the Concord grape; for John Murry, who found the Catawba in the woods of Carolina; for the men who gave us the Winesap, the Golden Pippin and the Duchess pear. One of these men, John Chapman, was a pathfinder and a pioneer. Three motives alone can explain his career—love and duty and God. His life is full of encouragement, rebuke and inspiration to the youth of today, and in their interest I have tried to bring out the portrait of this scarred hero who toiled all his life long in the orchards and vineyards for the people of the republic."

Col. C. W. Gurney (S. D.): In giving the names of pioneers who have blessed this country, like Dr. Bull and others, I noticed the

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speaker omitted the name of the originator of the Wealthy apple, Peter Gideon. I think that should not be done.

Mr. Pabody: I was simply quoting this from Dr. Hillis' book, and although I had Mr. Gideon in mind I did not feel like supplying the name.

Mr. A. J. Philips (Wis.): It is a very interesting book to read for a young person—or any person, for that matter—and in reading it we learn a great deal by comparison. I have tried to compare the work of Chapman, or Johnny Appleseed, with the work of Peter Gideon, who did so much for this northwestern country. It seems if we wrote one book about "Johnny Appleseed", the people of the Northwest and the United States ought to write a dozen books concerning the work of Peter M. Gideon. (Applause.)

I was going to say it at some other time, but I might as well say it now: I did a good deal of thinking during the past presidential campaign, and I thought the people of Wisconsin and Minnesota ought to be ashamed to think that there are men in the United States who can put up $125,000 to elect a president, and that the people spend $1,700,000 to elect a president, and we cannot raise a thousand dollars for a Gideon memorial. We ought to have fifty thousand dollars out at interest that came from all points in the United States. The whole United States is reaping the benefit from the Wealthy apple that was originated by Peter M. Gideon, and I hope we shall do something that will be worth while instead of letting it go at that paltry five hundred dollars. Why, our politicians would spend that for one spree! (Applause.)

Mr. Pabody: When my wife was a child she was familiar with a tree planted by "Johnny Appleseed." The tree was of a large size and bore a good quality of fruit.

The President: While the horticultural society is encouraging the planting of trees we ought to encourage the planting of apple seeds among the children as well as the grown people.

Mrs. E. F. Pabody: I was familiar with the tree Mr. Pabody mentioned, and it was of such a size that I hardly believe it could be put into this room, and this tree stood in the middle of a large field in Ohio. In a letter I received from my brother he gave me the dimensions. He said the tree was over forty feet high, and the expansion of its limbs was over forty feet. Father used to take the smaller children and drive under it with the wagon. This Malinda apple resembles the apples borne on that tree more than anything else. That apple had some little red stripes on it. The tree would bear as much as forty bushels at a time. My brother said it would measure ten feet in circumference at the stump of the tree. We children named it the "Orchard." It lived until some time in the sixties, when it was broken off at the stump. (Applause.)

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Top-Working Notes from a Long Experience.

A. J. PHILIPS, WEST SALEM, WIS.

My first ideas in top grafting, formed and tried in the year 1848, were failures. I selected the chestnut for my hardy stock, chopped a hole in the side near the root and put in a quart of earth, and therein planted my yearling apple tree. While waiting for growth to start, my father discovered my work and at once informed me that such work was a failure as far as raising apples or improving the chestnuts was concerned. But it being the proper season for grafting he took me into the orchard and showed me how to cut scions and to insert and wax the graft. Though this was sixty-two years ago, it awakened an enthusiasm in this work which has continued until this time.

In the early sixties, some years after coming to Wisconsin, in looking over a man's orchard in Jefferson county I found a dozen trees that had been top-grafted and were all he had left of one hundred trees. Though at that time I had no desire to plant an orchard, it made an impression on my mind, so that when in the seventies I started planting my orchard I began to think of my former experiences and observations in this work. At this time I was fortunate in having such men as Ephriam Wilcox and John S. Harris as advisors in this work. I was also fortunate about this time in having as a guest for two days and nights the late Dr. P. A. Jewell, the founder of the Lake City nurseries. He gave me cheering words and much kindly advice in my work, and I remember him with much pleasure.

But perhaps the most marked time in shaping my experiences was at the annual meeting of your society, held at Rochester some thirty years ago. Mr. Wilcox was with me. At that meeting I met for the first time the late A. W. Sias, a noble specimen of God's work. He had on exhibition—for which he received a five-dollar premium—a Virginia crab tree which had made a growth of over five feet the previous season. Here, too, I formed the acquaintance of another of God's noblemen, the late Mr. J. T. Grimes, of this city. I told him of my work in top-grafting and said my great hope was in getting not only a hardy stock but a vigorous grower, and called his attention to the Virginia on exhibition, and said I thought that might fill the bill and asked him if he knew where I could find any of the trees. I found he was my man, as he said he could furnish me some two-year-old trees. I bought twenty of him, and the next season I top-worked them with the Wealthy, and though over thirty years have elapsed most of those trees are bearing still, though a row of Wealthys on their own roots set near by at the same time have been dead for some years.

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Messrs. Green, Latham and Elliot have seen those trees once, and Mr. Harris many times.

Every year since that time I have had more or less experience in top-grafting and caring for the trees, and I have derived much pleasure and some profit from it. At first, both in Wisconsin and also in your state, many had misgivings and doubts about this work ever proving

Where A. J. Philips lives and grows flowers—in West Salem, Wis.

a profitable investment, and my statement that it increased hardiness and longevity was disputed by many, but when this fruit so grown began to be exhibited at the fairs, and it was found that men having those trees grafted on good, vigorous stocks went to them to get their prize apples, some began to change their views. I know of one Wisconsin man who was inclined to poke fun at the top-working fad, as

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he called it, who has since gathered fruit from trees that I top-worked at the Wausau trial orchard to exhibit at Wisconsin fairs.

In that orchard while it was in my charge I started a series of experiments which to me were very interesting. I set some nine different varieties of apples the first year, as follows: First, I set a two-year-old Virginia crab tree to be top-worked with Wealthy; then I set a Wealthy root-graft; then a Wealthy two-year-old tree on its own roots or own stock; then in the same row I duplicated this planting; next I did the same with McMahon, Okabena, Patten's Greening, Northwestern Greening, Utter's and several others. Some six years afterwards on measuring I found these trees to be about the same size, but in nearly every instance I found the top-worked tree to be bearing the best specimens, owing, I think, to the root power and great vigor of the Virginia. The changing of those having the care of this orchard has lessened the value of this series of experiments. The one best suited to get the best out of this work is the one who has worked a part of his life into it, as he watches their growth and development as though it were a part of his own being. My experience is that after my family and the dumb animals that I reared, my trees and grafts come next in my affections and care.

Your exhibits of top-worked apples, both last and this year, are valuable lessons, and it is a pleasure to me to know that I furnished scions for some of them. I am not doing much work in my own orchard now. It, like Brother Cummins', is turned over to strangers, but I still top-graft some in my garden every year.

My experience is not so much a profitable as a pleasant one. Like a poor shotgun I have scattered too much and have tried too many varieties. Had I concentrated my efforts and grafted fifty trees of one kind in one or two years, as my brother Kinney did, it would have paid me better, but I have no regrets. Showing my friend, the late Secretary Rusk, what I was doing in this line, enabled me to be employed by the Department to spend about two years at Washington answering correspondence and looking up new seedling apples in Iowa, Minnesota and Wisconsin. This was a valuable and interesting experience to me, and when I was sent to Iowa to look up the Malinda, I brought home scions from which I top-worked trees which have furnished me hundreds of bushels of apples, the beautiful trees of which form part of the western boundary of my orchard.

Another happy experience of mine was in entertaining the late Prof. Goff for two days in my orchard and hearing him pronounce the tree I afterwards cut and presented to your society the finest top-

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worked tree he ever saw. This tree Prof. Green had in his class room for years. I cut it because I felt that a hundred young men here could see and examine it where only one could see it in my orchard.

Another pleasant experience I enjoyed was to have our dear old friend Yahnke visit and examine my orchard. After showing him around among the top-worked trees and showing him the Utter bearing on eight different stocks, he exclaimed: "Why, Philips, I did not have an idea that you had done so much for the benefit of others." More especially in top-working, he said: "A young man could learn here in a day more than he could learn in years of experimenting, and I wish every young horticulturist could see it with his own eyes."

Experience has taught me that the Virginia crab is the best stock to use on my soil. It has also taught me that limbs from one-half to one inch in size are the best to graft on. Another thing that has been a great pleasure to me is that I have ever been free to impart any information I possessed to others free of cost, especially to young men, and that I have given awav scions by the thousands, many times paying the postage myself. This, I think, is one of the reasons that your secretary has honored me by inviting me to read this paper before your society at this time. These experiences have been pleasant, and although not very profitable to me I hope many young men will profit by them. That is why I relate them and why I wrote my book on kindness.

In Planting, Set the Tree about six inches deeper than desired and after throwing in a few shovelfuls of fine dirt, churn the tree up and down vigorously a few times and gradually raise it to the proper height in doing so. This tends to place the roots in a normal position and also works the soil in among them. Next get in with both feet and tramp the soil thoroughly, the firmer the better. The secret of success in getting transplanted trees to grow is to tramp the soil thoroughly about the root system. See that every root comes in close contact with the soil surface. Any open spaces or air holes are sure to make trouble. After the soil has been filled in about two-thirds full, the tramping should be repeated and then a loose layer of soil left on the snrface.

No One Can Afford to harvest many acres of potatoes without a power digger. The best way to handle them from the field is to pick them up in bushel crates and haul upon a low wagon to the cellar or storehouse. From here they may be run over the sorter and bagged, and sent to market. Every grower should have a sorter. The one with a mesh in form of an endless apron which elevates them into a bag suits best. It costs apdroximately $30 to grow an acre of potatoes, and it is not an infrequent thing for a grower to receive $100 per acre gross for the same.

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Fires in Our National Forests.

G. E. MARSHALL, SUPERVISOR MINNESOTA NATIONAL FOREST, CASS LAKE.

The subject of fighting fire in our national forests is one that has been widely discussed during the past summer. Fires have raged in various states from coast to coast, causing millions of dollars damage to timber and personal property, and the fact that the forest service controlled fires on 160,000,000 acres of land has been the cause of considerable comment and has no doubt been the means of starting a movement by the states as well as private individuals and corporations to safeguard their forests.

Being on duty in the Minnesota National Forest, I am naturally more familiar with conditions as they exist in that forest. While the work of fighting forest fires intelligently is of great importance, the prevention of them is of still greater, and in giving our experience in fighting fires in the Minnesota National Forest it is necessary to go into its past history, the various Acts of Congress by which the forest was created and the rules and regulations under which logging was carried on, all of which looked to the prevention of fires rather than the fighting of them.

The first step taken towards the creation of the Minnesota National Forest was the passage of the Morris Act, July 27, 1902, amending the Nelson Act of January 14, 1889, the latter having as its aim the opening of the Chippewa Indian Reservations. The Morris Act provided that the Forester of the U. S. Department of Agriculture should select 200,000 acres of land classified as "pine" and 25,000 acres classified as "agricultural." As the so-called "agricultural" lands were scattered through the "pine" lands, this amount it was thought necessary to include in order to make the forest one solid body.

On the "pine" land, ninety-five per cent of the timber was to be cut and removed, five per cent to remain for seed purposes. In addition to this, the forester was allowed to select ten sections of "pine" land on which all the timber was to be retained. On all the 200,000 acres of "pine" land, the timber was to be cut and removed under regulations prescribed by the forester, chief among which was that calling for the burning of all tops and litter made by the logging operations and the retention of all trees ten inches and under in diameter. These ten-inch trees, with the seed trees, provided for the future forest while the burning of the brush served as a protection for it.

During the winter of 1907-8 steps were taken to secure the passage of a bill which delineated by metes and bounds the Minnesota National

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Forest, and on May 23, 1908, the bill was finally approved, and the Minnesota National Forest, comprising 294,752 acres, was thereby created. By authority of this act, the forester is allowed to select ten per cent of the unsold standing timber for seed purposes, instead of five per cent, as provided for in the Morris Act, the remaining 90 per cent to be sold for the benefit of the Indians.

Under the act of May 23, what was formerly known as the ten sections, the islands in Cass Lake, 160 acres on Sugar Point and 7,000 acres on Pine Point in Leech Lake, were added to the forest. On this territory no timber will be cut except as the forester directs and deems advisable in the conduct of a national forest.

At the close of the logging season of 1907-8, 261,993,345 feet (board measure) of timber had been removed from 54,339 acres of land, 50,339 acres of which had been cleared of brush and debris and seed trees ten inches and over, amounting to 13,385,020 feet left standing.

Brush burning on the scale that it has been carried on in the Minnesota National Forest had never before been attempted. It was freely stated and published before lumbering began in this forest that the brush could not be piled and burned for less than $2.00 per thousand and, further, that in the heavily timbered sections it could not be burned at all without destroying the country. It has been proven by actual operations for the past four years that it can be successfully and properly done for from 12 to 25 cents per thousand, according to the stand of timber and the ability of those in charge of the work, and that instead of destroying the country an average of less than two per cent of the area has been covered with fire.

These last figures (the cost of burning and the area burned) I wish to impress upon you strongly; they are not the result of elaborate mathematical calculations, scientific research or anything of the kind. but hard, solid facts that have been taken from four years' actual experience. They show beyond any question that the brush can be economically disposed of and the territory left in such condition that the reproduction has not been injured and the chief fire menace is done away with.

What would this have meant to the towns on the range this fall? From all reports, most of the fires, including the Chisholm fire, either secured their start or gained their terrible headway in the slashings of old logging operations. The Minnesota National Forest did not escape uninjured, but had the conditions in the forest been the same as they were in the other fire districts of the state the damage would have been hard to calculate.

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To the removal of the brush and the patrol system maintained by the Forest Service can be given the credit for the small number of fires and the control of those that did occur. It is a fact conceded by many of the residents in and around the forest that had it not been for the precautionary methods adopted some of the villages in and adjoining the forest would have shared the fate of Chisholm.

But one fire of any size occurred in the Minnesota National Forest during the fall, and this was caused by sparks from a locomotive. This fire covered territory that had been logged and the brush burned four years ago. In the meantime considerable underbrush had sprung up, causing a dense ground cover. The soil was a heavy clay, baked hard by the long, dry spell of August and September. The area covered by this fire was about 700 acres, and while the entire fire was never completely extinguished, on account of the dry swamps and old logs burning, it never burned to the extent of killing any standing timber or so fiercely but that the men worked right on the fire line—in fact within the burned area now stands a set of old logging camps which four men easily saved, allowing the fire to work all around them and pass on. At no time did this fire endanger life, personal property or even the standing timber.

At the time this fire was burning, various fires menaced the village of Cass Lake, and all men available were used in the protection of the village even to the extent of closing the local mill down for an afternoon and using the mill hands in the work. In view of this, it was an impossibility to hire men to go outside of the village and away from their homes; consequently the most men employed by the Forest Service at any one time to fight fire was but nine, and these with four Service men, making thirteen in all, comprised the entire crew. The fact that thirteen men held this fire in check and prevented serious damage plainly demonstrates the advisability of brush burning. Had the brush been allowed to be unburned on this area, which cut nearly 1,000,000 feet to the forty acres, it would have been impossible to control it, much less extinguish it.

In fighting this fire, long handled shovels, grub hoes and brush scythes were the only tools used. The scythes were used to brush out a line, and the grub hoes then loosened the baked clay so that it could be more easily handled with shovels. In the sandy districts of the forest, a shovel is all that is necessary, and I firmly believe that with the brush disposed of as it has been, that it will be impossible in the future to start a fire that cannot be controlled and stopped.

Estimates and recommendations have been made for a system of roads and trails through the Minnesota National Forest. With the

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slashings disposed of and the roads offering easy access as well as serving as fire breaks, the fire danger in the Minnesota National Forest will be practically eliminated.

In patrol work, the territory one man can look after depends entirely on the topography of the country. Last spring during the fire season eleven men were used on the Minnesota National Forest for patrol duty, giving an average of 27,000 acres per man. On western forests the average per man is a great deal higher; in fact there are two lookout stations in one of the Idaho forests from which, with the aid of field glasses, nearly a million acres are visible. This would be an impossibility in the Minnesota National Forest, where the land is perfectly level and covered with a dense growth of timber.

Practically all patrol work in the Forest is along the lines of the railway, our greatest fire danger. Six miles of track is all that one man can look after right, though in the sections back from the railway and containing no settlers, three times the territory can be safely entrusted to one patrol. On account of the level, brushy character of the country, the many lakes and the railways that traverse the heart of the forest, the territory that can be controlled by one man is very limited compared with western forests.

In the fighting of fires intelligently, one should be perfectly familiar with the topography of the country, knowing its lakes, swamps, ridges, etc. With this information, fires that cannot be extinguished can be so controlled and guided as to run them into a lake or swamp where they must of necessity stop.

During the year 1908, fires covering 1,485 acres were reported on the Minnesota National Forest, or about one-half of 1 per cent of the entire area, while the total cost of fire fighting and patrol work for the entire forest averaged a half a cent per acre, or $115.20 for every township, thirty-six square miles. Private corporations or the state could protect the lands for one-third less than this, for included in these figures are the salaries of annual employes drawing from $100 to $125 per month, who were temporarily detailed for patrol work during the dangerous season, while the state could hire men temporarily for $75 per month for the same work. It will be seen therefore that the state could protect its timber at very little cost, a policy that should be adopted without further delay.

A very low estimate of the stand in a timbered district is 1,000,000 to the section, or 36,000,000 to the township. At a price of $5 per thousand—and stumpage cannot be purchased for that price now—a township is worth $180,000. This can be protected for from $100 to $125 per year in this state. From a practical business view of the

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proposition, this is certainly cheaper insurance than can be obtained on any other commodity that I know of.

A review of the fires in the national forests for the years 1905-6-7 shows a remarkable improvement as a result of systematic patrol and the handling of fires by experienced men. In 1905 the national forests comprised 97,711,455 acres, of which 279,592 acres were burned, with a loss of $101,282. In 1906, with an area of 127,167,271 acres, fire covered 115,416 acres, with a loss of $76,183. In 1907, when the national forests had increased to 162,023,190 acres, but 109,410 acres were burned at a loss of $31,590; in other words, in 1907 although the area of the forests had increased by two-thirds over 1905, the fires had been reduced to less than two-fifths and the damage to about three-tenths of what it was in 1905.

By its system of fire patrol the Forest Service has reduced the burned-over area in the national forests from 66-100 of 1 per cent in 1904 to 16-100 of 1 per cent in 1905, then to 12-100 of 1 per cent in 1906, and to 7-100 of 1 per cent in 1907.

When it is taken into consideration that but 1,185 men were regularly employed to guard 160,000,000 acres, an average of 135,000 acres, or 211 square miles, per man, and that the fire damage has been consistently reduced even with a constantly increasing area, these facts become of considerable interest.

The President: Some years ago an effort was made to the end of preserving a tree below ten inches in size. They were trying to get laws enacted compelling that sort of treatment of forests as they were being cut, but they were laughed at by legislators, and congress would not even take notice enough of them to laugh at them. You can see now what the country has suffered! See what Minnesota has suffered! Think of the Hinckley fire, the Chisholm fire and all the areas burned over in recent years that might have been saved at a cost of twenty-five cents a thousand. One of the severest rebukes that any nation ever merited is the rebuke this nation merits by reason of its neglect of forest administration.

Making Grafting Wax.—Melt together four quarts common rosin, two parts beeswax and one part tallow. When cold enough roll it into sticks about six inches long and one and one half inches in diameter, being careful to reduce all lumps. It can be kept in a vessel of water for an almost indefinite time. More or less tallow can be used to make the wax softer or harder. In cold weather a softer wax is needed than when the temperature is higher. Strips of muslin or tough paper can be dipped into the melted wax for use in tongue grafting. Linseed oil is sometimes used in place of tallow, but is not generally considered as good. If used try this formula: six lbs rosin, two lbs beeswax and one pt linseed oil. Be sure the oil is pure.

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Award of Premiums, Minnesota State Fair, 1909.

APPLES.

(Open to All.)

Peck of Patten's Greening: Carl G. Steller, Excelsior, $1.48; W. J. Tingley, Forest Lake, $1.48; H. H. Whitmore, Excelsior, $1.47; Geo. W. Strand, Taylors Falls, $1.47; John Bisbee, Madelia, $1.37; A. A. Bost, Excelsior, $1.37; E. A. Farmer, Minneapolis, $1.36; P. H. Perry, Excelsior, $1.31; Mrs. S. R. Spates, Wayzata, $1.29; Fred A. Averill, Excelsior, $1.22; Frank Morris, Sr., Lake Elmo, $1.04; A. B. Lyman, Excelsior, $1.04; A. Brackett, Excelsior, $1.03; Thos. Redpath, Wayzata, $1.03; Joseph W. Patten, Long Lake, $.95; Preston McCully, Maple Plain, $.95; J. O. Weld, Mound, $.95; Marion De Witt, Hammond, $.93; A. H. Reed, Glencoe, $.91; H. H. Pond, Minneapolis, $.90; A. M. Mitchell, Hammond, $.80; John Henderson, Cokato, $.65.

Peck of Duchess apples: John Bisbee, $1.21; Carl G. Steller, $1.19; H. H. Whitmore, $1.15; Alfred Veblen, Stillwater, $1.14; P. H. Perry, $1.07; Mrs. J. K. Bowers, Gladstone, $1.07; Robt. A. Sodergren, Scandia, $1.03; Frank Morris, Sr., $1.01; Jos. W. Patten, $.94; Mrs. S. R. Spates, $.93; W. J. Tingley, $.93; Preston McCully, $.92; G. A. Anderson, Renville, $.92; E. G. Enestvedt, Sacred Heart, $.90; John Henderson, $.89; A. B. Lyman, $.88; J. A. Howard, $.87; A. H. Reed, $.87; A. M. Mitchell, $.86; Jos. Briggs, Zumbro Falls, $.86; G. W. Strand, $.84; Thos. Redpath, $.83; Marion De Witt, $.79; F. E. Ford, Glencoe, $.77; Henry Husser, Minneiska, $.77; A. A. Bost, $.75; A. Brackett, $.61.

Collection of fifteen named varieties: John Bisbee, $3.32; A. B. Lyman, $3.02; Henry Husser, $3.00; Frank Morris, $2.93; G. W. Strand, $2.93; W. J. Tingley, $2.93; Jos. W. Patten, $2.93; Mrs. S. R. Spates, $2.73; P. H. Perry, $2.71; J. A. Howard, $2.14; G. A. Anderson, $2.12; Clarence Wedge, Albert Lea, $2.11; Anton J. Wilwerding, Freeport, $2.09; Jos. Briggs, $2.06; Marion De Witt, $1.49; A. M. Mitchell, $1.49.

Collection of ten named varieties: H. H. Whitmore, $1.95; Carl G. Steller, $1.91; W. J. Tingley, $1.91; F. F. Farrar, White Bear, $1.81; A. W. Page, Long Lake, $1.81; A. B. Lyman, $1.81; John Bisbee, $1.81; Mrs. S. R. Spates, $1.71; Robert A. Sodergren, $1.61; G. A. Anderson, $1.61; B. P. Christenson, Hutchinson, $1.61; D. T. Wheaton, Morris, $1.61; Jos. W. Patten, $1.51; P. H. Perry, $1.51; G. W. Strand, $1.51; F. I. Harris, La Crescent, $1.37; Anton J. Wildwerding, $1.27; John Henderson, $1.27; H. H. Pond, $1.26; Alfred Veblen, $1.17; Jos. Briggs, $1.03; A. M. Mitchell, $1.02; Marion De Witt, $.92.

APPLES.

(For professionals.)

Collection of named varieties (hybrids and crabs excepted), not to exceed fifty varieties nor less than thirty varieties: J. A. Howard, $21.88; A. B. Lyman, $20.13; F. I. Harris, $19.69; John Bisbee, $19.47; Jos. Briggs, $18.83.

Single Varieties.

First premium, $1.00; second premium, $.75; third premium, $.50.

Anis: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, F. I. Harris.

Antonovka: 1st, Thos. Redpath; 2d, A. B. Lyman; 3d, O. F. Brand & Son, Faribault.

Ben Davis: 1st, H. H. Pond; 2d, A. Brackett; 3d, F. I. Harris.

Brett: 1st, B. P. Christenson; 2d, A. B. Lyman; 3d, Thos. Redpath.

Borovinca: 1st, Fred A. Averill; 2d, Thos. Redpath; 3d, J. A. Howard.

Christmas: 1st, Geo. W. Strand; 2d, A. B. Lyman; 3d, F. I. Harris.

Evelyn: 1st, A. B. Lyman.

Fameuse: 1st, F. I. Harris; 2d, G. A. Anderson; 3d, J. A. Howard.

Gideon: 1st, A. B. Lyman; 2d, W. H. Morris, Excelsior; 3d, H. F. Busse, St. Paul.

Giant Swaar: 1st, F. I. Harris; 2d, J. A. Howard; 3d, Jos. Briggs.

Gilbert: 1st, A. B. Lyman; 2d, J. A. Howard; 3d, Jos. Briggs.

Golden Russett: 1st, Clarence Wedge; 2d, J. A. Howard; 3d, Jos. Briggs.

Grundy: 1st, J. A. Howard; 2d, Joseph Briggs; 3d, H. H. Pond.

Haas: 1st, G. A. Anderson; 2d, F. I. Harris; 3d, Carl G. Steller.

Hutchins: 1st, J. A. Howard; 2d, Joseph Briggs.

Iowa Beauty: 1st, J. W. Beckman, Cokato; 2d, John Bisbee; 3d, J. A. Howard.

Jewell's Sweet: 1st, Thomas Redpath.

Jewell's Winter: 1st, Joseph Briggs; 2d, J. A. Howard; 3d, Thomas Redpath.

Judson: 1st, J. A. Howard; 2d, Joseph Briggs.

Lord's L: 1st, Thomas Redpath; 2d, Walter A. Yahnke, Winona; 3d, F. I. Harris.

Lowland Raspberry: 1st, A. B. Lyman; 2d, Geo. W. Strand.

Nelson: 1st, J. A. Howard; 2d, Joseph Briggs; 3d, F. I. Harris.

Newell's: 1st, J. A. Howard; 2d, Joseph Briggs; 3d, John Bisbee.

Peach: 1st, J. A. Howard; 2d, Joseph Briggs.

Plumb's Cider: 1st, A. B. Lyman.

Red Wine: 1st, A. B. Lyman; 2d, Geo. W. Strand.

Red Astrachan: 1st, G. A. Anderson; 2d, J. A. Howard; 3d, Joseph Briggs.

Rollin's Prolific: 1st, J. A. Howard; 2d, Joseph Briggs.

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St. Lawrence: 1st, J. A. Howard; 2d, Joseph Briggs.
Talman Sweet: 1st, O. F. Brand & Son; 2d, A. B. Lyman; 3d, Joseph Briggs.
Tetofsky: 1st, George W. Strand; 2d, F. I. Harris; 3d, Joseph Briggs.
Utter: 1st, A. B. Lyman; 2d, F. A. Averill; 3d, Clarence Wedge.
University: 1st, A. B. Lyman; 2d, A. A. Bost; 3d, F. I. Harris.
White Pigeon: 1st, J. A. Howard; 2d, Joseph Briggs.
Walbridge: 1st, G. A. Anderson; 2d, G. W. Strand; 3d, J. A. Howard.
Yahnke: 1st, H. F. Busse; 2d, Walter A. Yahnke; 3d, Thomas Redpath.
Yellow Sweet: 1st, A. B. Lyman.
Yellow Transparent: 1st, A. B. Lyman.

1st premium, $1.75; 2d premium, $1.50; 3d premium, $1.25; 4th premium, $1.00; 5th premium, $.75; 6th premium, $.50.

Anisim: 1st, Joseph Briggs; 2d, Thomas Redpath; 3d, J. A. Howard; 4th, F. A. Averill; 5th, G. W. Strand; 6th, F. I. Harris.
Charlamoff: 1st, A. B. Lyman; 2d, B. P. Christenson; 3d, J. A. Howard; 4th, Joseph Briggs; 5th, A. A. Bost; 6th, F. A. Averill.
Duchess: 1st, C. G. Steller; 2d, J. A. Howard; 3d, G. A. Anderson; 4th, Joseph Briggs; 5th, A. B. Lyman; 6th, E. G. Enestvedt, Sacred Heart.
Hibernal: 1st, A. B. Lyman; 2d, Joseph Briggs; 3d, G. A. Anderson; 4th, H. F. Busse; 5th, J. A. Howard; 6th, G. W. Strand.
Malinda: 1st, A. B. Lyman; 2d, F. I. Harris; 3d, J. A. Howard; 4th, G. W. Strand; 5th, John Bisbee; 6th, Ianthe E. Poore, Bird Island.
McMahon: 1st, J. A. Howard; 2d, Thomas Redpath; 3d, O. F. Brand & Son; 4th, Joseph Briggs; 5th, Clarence Wedge; 6th, A. B. Lyman.
Northwestern Greening: 1st, B. P. Christenson; 2d, C. G. Steller; 3d, F. I. Harris; 4th, A. B. Lyman; 5th, J. A. Howard; 6th, G. W. Strand.
Okabena: 1st, G. W. Strand; 2d, A. Brackett; 3d, C. G. Steller; 4th, Joseph Briggs; 5th, F. I. Harris; 6th, B. P. Christenson.
Patten's Greening: 1st, C. G. Steller; 2d, A. Brackett; 3d, A. A. Bost; 4th, J. A. Howard; 5th, Joseph Briggs; 6th, G. W. Strand.
Peter: 1st, A. B. Lyman; 2d, G. W. Strand; 3d, B. P. Christenson; 4th, J. A. Howard; 5th, F. A. Averill; 6th, Joseph Briggs.
Peerless: 1st, G. W. Strand; 2d, F. I. Harris; 3rd, A. B. Lyman; 4th, F. A. Averill; 5th, C. G. Steller; 6th, O. F. Brand & Son.
Wealthy: 1st, W. H. Morris, Excelsior; 2d, C. G. Steller; 3d, A. B. Lyman, 4th, A. Brackett; 5th, J. A. Howard; 6th, Joseph Briggs.
Wolf River: 1st, J. A. Howard; 2d, A. B. Lyman; 3d, C. G. Steller; 4th, Clarence Wedge; 5th, John Bisbee; 6th, Joseph Briggs.

APPLES.

(For Amateurs.)

Collection of named varieties (hybrids and crabs excepted), not to exceed forty nor less than twenty varieties: W. J. Tingley, $19.24; A. M. Mitchell, $18.22; Marion De Witt, $17.20; P. H. Perry, $15.20; Mrs. S. R. Spates, $10.13.

Single Varieties.

1st premium, $1.00; 2d premium, $.75; 3d premium, $.50.

Anis: 1st, A. M. Mitchell; 2d, Marion De Witt.
Antonovka: 1st, Mrs. H. W. Shuman, Excelsior; 2d, D. T. Wheaton, Morris; 3d, F. J. Butterfield, Long Lake.
Ben Davis: 1st, H. H. Whitmore; 2d, P. H. Perry; 3d, Ianthe E. Poore.
Brett: 1st, W. J. Tingley; 2d, P. H. Perry; 3d, J. W. Patten.
Boronvinca: 1st, A. Vebler; 2d, P. H. Perry; 3d, Mrs. S. R. Spates.
Christmas: 1st, A. M. Mitchell; 2d, Mrs. H. W. Shuman; 3d, Marion De Witt.
Fameuse: 1st, Henry Husser; 2d, W. J. Tingley; 3d, Mrs. H. W. Shuman.
Gideon: 1st, Frank Morris, Sr.; 2d, P. H. Perry; 3d, A. J. Wilwerding, Freeport.
Giant Swaar: 1st, J. W. Patten; 2d, A. M. Mitchell; 3d, Marion De Witt.
Gilbert: 1st, F. F. Farrar; 2d, H. H. Whitmore; 3d, A. M. Mitchell.
Golden Russet: 1st, Henry Husser; 2d, Marion De Witt; 3d, A. M. Mitchell.
Grundy: 1st, W. J. Tingley; 2d, A. M. Mitchell; 3d, Marion De Witt.
Haas: 1st, W. J. Tingley; 2d, P. H. Perry; 3d, Marion De Witt.
Hutchins: 1st, Mrs. H. W. Shuman; 2d, A. M. Mitchell; 3d, Marion De Witt.
Iowa Beauty: 1st, Mrs. S. R. Spates; 2d, A. J. Wilwerding; 3d, A. W. Page.
Jewell's Sweet: 1st, A. M. Mitchell; 2d, Marion De Witt.
Jewell's Winter: 1st, Mrs. S. R. Spates; 2d, A. M. Mitchell; 3d, Marion De Witt.
Judson: 1st, Marion De Witt; 2d, A. M. Mitchell.
Lord's L: 1st, A. M. Mitchell; 2d, Marion De Witt.
Nelson: 1st, W. J. Tingley; 2d, Marion De Witt; 3d, A. M. Mitchell.
Newell's: 1st, Mrs. H. W. Shuman; 2d, Marion De Witt; 3d, A. M. Mitchell.
Peach: 1st, C. C. Gray, Rochester; 2d, Marion De Witt; 3d, A. M. Mitchell.
Plumb's Cider: 1st, Mrs. H. W. Shuman; 2d, Ellen B. Stubbs, Wayzata; 3d, F. J. Butterfield.
Red Astrachan: 1st, A. M. Mitchell; 2d, Marion De Witt.
Rollin's Prolific: 1st, A. M. Mitchell; 2d, Marion De Witt.
St. Lawrence: 1st, F. J. Butterfield; 2d, A. M. Mitchell; 3d, Marion De Witt.
Salome: 1st, A. M. Mitchell; 2d, Marion De Witt.
Superb: 1st, W. J. Tingley.
Tallman's Sweet: 1st, Henry Husser.

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Tetofsky: 1st, P. H. Perry; 2d, W. J. Tingley; 3d, D. T. Wheaton.
Utter: 1st, Mrs. H. W. Shuman; 2d, A. M. Mitchell; 3d, Marion De Witt.
University: 1st, H. H. Whitmore; 2d, W. J. Tingley; 3d, E. A. Farmer.
White Pigeon: 1st, A. M. Mitchell; 2d, Marion De Witt.
Walbridge: 1st Marion De Witt; 2d, A. M. Mitchell; 3d, W. J. Tingley.
Yahnke: 1st, W. J. Tingley; 2d, Marion De Witt; 3d, A. M. Mitchell.
Yellow Sweet: 1st, W. J. Tingley; 2d, A. M. Mitchell; 3d, Marion De Witt.
Yellow Transparent: 1st, P. H. Perry; 2d, W. Chas. A. Manley, Clear Lake; 3d, E. A. Farmer.

1st premium, $1.75; 2d premium, $1.50; 3d premium, $1.25; 4th premium, $1.00; 5th premium, $.75; 6th premium, $.50.

Anisim: 1st, Henry Husser; 2d, A. W. Page; 3d, W. J. Tingley; 4th, Mrs. S. R. Spates; 5th, F. F. Farrar; 6th, Frank Morris, Sr.
Charlamoff: 1st, H. H. Whitmore; 2d, Ellen B. Stubbs; 3d, Frank Morris, Sr.; 4th, Mrs. S. R. Spates; 5th, W. J. Tingley; 6th, Jas. F. Harrison, Excelsior.
Duchess: 1st, Alfred Veblen; 2d, A. W. Page; 3d, P. H. Perry; 4th, W. J. Tingley; 5th, W. C. A. Manley, Clear Lake; 6th, Chas. F. Nelson, Braham.
Hibernal: 1st, Alfred Veblen; 2d, W. J. Tingley; 3d, F. F. Farrar; 4th, John Henderson, Cokato; 5th, Frank Morris, Sr.; 6th, A. M. Mitchell.
Malinda: 1st, Henry Husser; 2d, Frank Stifter, Cokato; 3d, J. W. Patten; 4th, Frank Morris, Sr.; 5th, Jas. F. Harrison; 6th, F. J. Butterfield.
McMahon: 1st, Henry Husser; 2d, H. H. Whitmore; 3d, P. H. Perry; 4th, Alfred Veblen; 5th, A. W. Page; 6th, Jos. Taylor, Medford.
Northwestern Greening: 1st, P. H. Perry; 2d, J. W. Patten; 3d, Jas. F. Harrison; 4th, Henry Husser; 5th, A. W. Page; 6th, J. O. Weld, Mound.
Okabena: 1st, Frank Morris, Sr.; 2d, A. M. Mitchell; 3d, R. A. Sodergren; 4th, Mrs. S. R. Spates; 5th, Ellen B. Stubbs; 6th, P. H. Perry.
Patten's Greening: 1st, H. H. Whitmore; 2d, Dr. W. B. Pineo, Minneapolis; 3d, W. J. Tingley; 4th, Jas. F. Harrison; 5th, E. A. Farmer; 6th, W. C. A. Manley.
Peter: 1st, P. H. Perry; 2d, F. J. Butterfield; 3d, A. W. Page; 4th, W. J. Tingley; 5th, J. W. Patten; 6th, W. C. A. Manley.
Peerless: 1st, Mrs. S. R. Spates; 2nd, Ellen B. Stubbs; 3rd, Jas. F. Harrison; 4th, Alfred Veblen; 5th, A. W. Page; 6th, A. M. Mitchell.
Wealthy: 1st, Jas. F. Harrison; 2nd, Dr. W. B. Pineo; 3rd, H. H. Whitmore; 4th, Ellen B. Stubbs; 5th, Mrs. S. R. Spates; 6th, A. W. Page.
Wolf River: 1st, Henry Husser; 2d, Jas. F. Harrison; 3d, Alfred Veblen; 4th, Frank Morris, Sr.; 5th, A. M. Mitchell; 6th, P. H. Perry.

CRABS AND HYBRIDS.

(Open to All)

Best ten named varieties: P. H. Perry, $1.10; W. J. Tingley, $2.06; ....., $2.04; Geo. W. Strand, $2.00; A. B. Lyman, $1.93; Mrs. S. R. Spates, $1.80; Frank Morris, Sr., $1.79; A. J. Wilwerding, $1.65; H. H. Whitmore, $1.65; D. T. Wheaton, $1.53; J. A. Howard, $1.45.

Single Varieties.

1st premium, $1.00; 2d premium, $.75; 3d premium, $.50.

Dartt: 1st, W. J. Tingley; 2d, B. P. Christenson; 3d, Mrs. H. W. Shuman.
Early Strawberry: 1st, W. J. Tingley; 2d, Alfred Veblen; 3d, F. J. Butterfield.
Faribault: 1st, W. J. Tingley; 2d, Frank Morris, Sr.; 3d, O. F. Brand & Son.
Florence: 1st, Mrs. J. K. Bowers, Gladstone; 2d, Jas. F. Harrison; 3d, P. H. Perry.
Gideon's No. 6: 1st, Geo. W. Strand; 2d, W. J. Tingley; 3d, P. H. Perry.
General Grant: 1st, Chas. F. Nelson; 2d, J. A. Howard; 3d, G. A. Anderson.
Hyslop: 1st, R. A. Sodergren; 2d, D. W. Olson, White Bear; 3d, Jas. F. Harrison.
Lyman's Prolific: 1st, A. B. Lyman; 2d, C. G. Steller; 3d, Jas. F. Harrison.
Martha: 1st, Geo. W. Strand; 2d, A. J. Wilwerding; 3d, Alfred Veblen.
Minnesota: 1st, C. G. Steller; 2d, A. B. Lyman; 3d, B. P. Christenson.
Montreal Beauty: 1st, J. A. Howard; 2d, A. M. Mitchell; 3d, Jos. Briggs.
Meader's Winter: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, A. M. Mitchell.
Orange: 1st, J. A. Howard; 2d, A. M. Mitchell; 3d, Jos. Briggs.
Pickett's: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, A. M. Mitchell.
Pride of Minneapolis: 1st, Mrs. S. R. Spates; 2d, Thos. Redpath; 3d, O. F. Brand & Son.
Shield's: 1st, H. F. Busse, St. Paul; 2d, P. H. Perry; 3d, H. H. Whitmore.
Sweet Russet: 1st, G. W. Strand; 2d, P. H. Perry; 3d, B. P. Christenson.
Tonka: 1st, G. W. Strand; 2d, Mrs. S. R. Spates; 3d, D. T. Wheaton.
Transcendent: 1st, C. G. Steller; 2d, Alfred Veblen; 3d, Jas. F. Harrison.
Virginia: 1st, G. W. Strand; 2d, W. J. Tingley; 3d, C. G. Steller.
Whitney: 1st, G. W. Strand; 2d, C. G. Steller; 3d, F. I. Harris.
Seedling Winter Crab: 1st, G. W. Strand; 2d, Alfred Veblen; 3d, A. B. Lyman.

SEEDLING APPLES.

(Open to All.)

Collection (excluding crabs): T. E. Perkins, Red Wing, $65.00; A. B. Lyman, $15.00; H. H. Pond, $11.00; J. A. Howard, $9.00.

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Summer variety, kept in cold storage: 1st, H. H. Pond, $6.00; 2d, T. E. Perkins, $4.00; 3d, A. B. Lyman, $2.00; 4th, J. A. Howard, $1.00.

Fall variety, not sweet, never having received a premium at the Minnesota State Fair: 1st, T. E. Perkins, $6.00; 2d, F. A. Averill, $4.00; 3d, O. F. Brand & Son, $2.00; 4th, Thos. Redpath, $1.00.

Fall variety, not sweet, open to all: 1st, T. E. Perkins, $6.00; 2d, A. B. Lyman, $4.00; 3d, A. B. Lyman, $2.00; 4th, T. E. Perkins, $1.00.

Winter variety, not sweet, never having received a premium at the Minnesota State Fair: 1st, J. A. Howard, $10.00; 2d, T. E. Perkins, $8.00; 3d, O. F. Brand & Son, $4.00; 4th, J. A. Howard, $2.00.

Winter variety, not sweet, open to all: 1st, Thos. Redpath, $10.00; 2d, T. E. Perkins, $8.00; 3d, A. B. Lyman, $4.00; 4th, A. B. Lyman, $2.00.

Sweet variety, never having received a premium at the Minnesota State Fair, of such excellent quality as to make it worthy of cultivation; either fall or winter: 1st, T. E. Perkins, $6.00; 2d, J. A. Howard, $4.00; 3d, T. E. Perkins, $2.00.

PLUMS.

(Open to All.)

Best ten named varieties: G. W. Strand, $4.15; J. A. Howard, $3.74; Jos. Briggs, $3.23; Walter A. Yahnke, Winona, $3.05; Marion DeWitt, $3.02; A. M. Mitchell, $2.81.

Collection, not to exceed fifteen named varieties. Fruit of early ripening varieties may be kept in cold storage, to be divided pro rata: G. W. Strand, $5.10; J. A. Howard, $4.85; Walter A. Yahnke, $4.57; A. J. Wilwerding, $4.29; A. B. Lyman, $4.01; Jos. Briggs, $3.73; A. M. Mitchell, $3.45.

Single Varieties

First premium, $1.00; second premium, $.75; third premium, $.50.

Aitkin: 1st, I. E. Poore; 2d, J. A. Howard.
Bender (Paul Wolf): 1st, A. Brackett; 2d, A. B. Lyman; 3d, Walter A. Yahnke.
Brittlewood: 1st, Jos. Briggs; 2d, A. M. Mitchell; 3d, J. A. Howard.
Black Hawk: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, A. M. Mitchell.
Cheney: 1st, G. W. Strand; 2d, A. A. Bost; 3d, A. Brackett.
De Soto: 1st, Walter E. Yahnke; 2d, G. W. Strand; 3d, Jos. Briggs.
Forest Garden: 1st, G. W. Strand; 2d, A. A. Bost; 3d, F. E. Ford.
Hawkeye: 1st, Walter A. Yahnke; 2d, G. W. Strand; 3d, J. A. Howard.
New Ulm: 1st, G. W. Strand; 2d, J. A. Howard; 3d, Jos. Briggs.
Ocheeda: 1st, J. A. Howard; 2d, Walter A. Yahnke; 3d, Jos. Briggs.
Rockford: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, A. M. Mitchell.
Stoddard: 1st, J. A. Howard; 2d, G. W. Strand; 3d, Walter A. Yahnke.
Surprise: 1st, E. J. Enestvedt, Sacred Heart; 2d, Walter A. Yahnke; 3d, G. W. Strand.
Rollingstone: 1st, Mrs. S. R. Spates; 2d, Walter A. Yahnke; 3d, F. F. Farrar.
Terry: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, G. W. Strand.
Weaver: 1st, G. W. Strand; 2d, I. E. Poore; 3d, J. A. Howard.
Wolf, Freestone: 1st, J. A. Howard; 2d, Jos. Briggs; 3d, F. E. Ford.
Wolf, Clingstone: 1st, J. A. Howard; 2d, A. H. Reed, Glencoe; 3d, Walter A. Yahnke.
Wyant: 1st, Walter A. Yahnke; 2d, Mrs. S. R. Spates; 3d, J. A. Howard.

SUNDRIES.

Pears: F. I. Harris, La Crescent, Minn., $2.00.

Compass Cherry: 1st, G. W. Strand, $2.00; 2d, Mrs. S. R. Spates, $1.00; 3d, A. H. Reed, Glencoe, $.50.

Best Seedling of Japan Hybrid: A. Brackett, $5.00.

Best Plate of Seedling Plums: 1st, Walter A. Yahnke, $5.00; 2d, J. A. Howard, $4.00; 3d, J. A. Howard, $3.00.

GRAPES.

(Open to All.)

Collection (not less than ten named varieties): F. A. Averill, $26.00; P. H. Perry, $10.60; Mrs. Isabella Barton, Excelsior, $7.99; A. A. Bost, $7.67; G. W. Strand, $4.29; A. J. Wilwerding, $1.95; H. A. Sodergren, $1.50.

Single Varieties.

First premium, $1.00; second premium, $.75; third premium, $.50.

Agawam (Roger's No. 15): 1st, P. H. Perry; 2d, F. A. Averill; 3d, Mrs. Isabella Barton.
Aminia (Roger's No. 39): 1st, F. A. Averill; 2d, A. A. Bost.
Beta: 1st, G. W. Strand; 2d, A. A. Bost; 3d, A. J. Wilwerding.
Brighton: 1st, F. A. Averill; 2d, A. A. Bost; 3d, G. W. Strand.
Cottage: 1st, F. A. Averill; 2d, A. A. Bost.
Campell's Early: 1st, F. A. Averill; 2d, P. H. Perry; 3d, G. W. Strand.
Duchess: F. A. Averill.
Early Victor: 1st, Mrs. Isabella Barton; 2d, F. A. Averill; 3d, G. W. Strand.
Eldorado: 1st, Mrs. Isabella Barton; 2d, F. A. Averill.

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Empire State: 1st, F. A. Averill; 2d, Mrs. Isabella Barton.
Green Mountain: P. H. Perry.
Herbert (Roger's No. 44): F. A. Averill.
Iona: 1st, F. A. Averill; 2d, A. A. Bost.
Janesville: 1st, A. A. Bost; 2d, P. H. Perry; 3d, G. W. Strand.
Lindley (Roger's No. 9): 1st, F. A. Averill; 2d, A. A. Bost.
Lady: 1st, F. A. Averill; 2d, G. W. Strand; 3d, A. A. Bost.
Martha: 1st, A. A. Bost; 2d, F. A. Averill.
Massasoit (Roger's No. 3): 1st, A. A. Bost; 2d, F. A. Averill.
Moore's Diamond: 1st, F. A. Averill; 2d, G. W. Strand.
Niagara: 1st, F. A. Averill; 2d, G. W. Strand; 3d, A. J. Wilwerding.
Pocklington: 1st, F. A. Averill; 2d, G. W. Strand.
Pokeepsie Red: 1st, F. A. Averill; 2d, Mrs. Isabella Barton.
Telegraph: 1st, F. A. Averill; 2d, Mrs. Isabella Barton.
Wilder (Roger's No. 4): 1st, F. A. Averill.
Woodruff Red: 1st, Mrs. Isabella Barton; 2d, F. A. Averill.
Worden: 1st, F. A. Averill; 2d, P. H. Perry; 3d, A. A. Bost.
Wyoming Red: 1st, F. A. Averill; 2d, Mrs. Isabella Barton; 3d, P. H. Perry.
Concord: 1st, P. H. Perry; 2d, F. A. Averill; 3d, Mrs. Isabella Barton.
Delaware: 1st, F. A. Averill; 2d, P. H. Perry; 3d, G. W. Strand.
Moore's Early: 1st, A. A. Bost; 2d, P. H. Perry; 3d, F. A. Averill.

SEEDLING GRAPE.

Single variety: 1st, Frank Stifter, $3.00; 2d, A. J. Wilwerding, $2.00.

FLOWERS.

(For Professionals.)

Best collection of decorative plants: Holm & Olson, St. Paul, $95.00; John Vasatka, Minneapolis, $30.00.
Best display of plant in bloom: John Vasatka, $20.00.
Best five hanging baskets: John Vasatka, $6.00.
Pot or tub of made up palms: Holm & Olson, $5.00; John Vasatka, $4.00.
Specimen palm (any variety in pot or tub): Holm & Olson, $5.00; John Vasatka, $4.00.
Specimen fern (any variety in pot or tub): Holm & Olson, $5.00; John Vasatka, $4.00.
Vase planted for display: John Vasatka, $5.00.
Best display of cut flowers: Souden & Desmond, Minneapolis, $25.00; B. T. Hoyt, St. Paul, $20.00; John Vasatka, $15.00.
Basket of cut flowers, not to exceed twenty inches in length: Souden & Desmond, $10.00; R. A. Latham, Minneapolis, $8.00; John Vasatka, $6.00; B. T. Hoyt, $4.00.
Hand bouquet: Souden & Desmond, $4.00; John Vasatka, $3.00; R. A. Latham, $2.00; B. T. Hoyt, $1.00.
Bride's bouquet: Souden & Desmond, $5.00; R. A. Latham, $4.00; John Vasatka, $3.00.
Table decoration: R. A. Latham, $41.50; Souden & Desmond, $33.50; John Vasatka, $25.00.
Floral wreath on easel (not to exceed twenty-four inches): R. A. Latham, $32.50; Souden & Desmond, $27.50.

CUT FLOWERS—(Cultivated)

(For Amateurs.)

First premium, $4.00; second premium, $2.50; third premium, $1.50; fourth premium, $1.00.

Collection of astors: 1st, Mrs. A. A. Brown, St. Louis Park; 2d, Mrs. F. H. Gibbs, St. Paul; 3d, F. F. Farrar; 4th, Mrs. Chas. Krause, St. Paul.
Collection of dahlias: 1st, Mrs. S. R. Spates; 2d, Mrs. Chas. Krause; 3d, Frank Morris, Sr.
Collection of dianthus pinks: 1st, Frank Morris, Sr.; 2d, E. D. Fuller, Minneapolis; 3d, John A. Gantzer, St. Paul; 4th, Mrs. Chas. Krause.
Collection of gladioli: 1st, Frank Morris, Sr.; 2d, E. A. Farmer; 3d, Mrs. F. H. Gibbs; 4th, Mrs. Chas. Krause.
Collection of nasturtiums: 1st, Mrs. A. A. Brown; 2d, Frank Morris, Sr.; 3d, Mrs. J. M. Scharff, St. Paul; 4th, Mrs. Chas. Krause.
Collection of marguerite carnations: 1st, Mrs. F. H. Gibbs; 2d, Daniel Gantzer, St. Paul; 3d, Mrs. J. F. Fairfax, Minneapolis; 4th, Mrs. Chas. Krause.
Collection of zinnias: 1st, Mrs. A. A. Brown; 2d, A. Brackett; 3d, F. F. Farrar; 4th, Mrs. Chas. Krause.
Collection of perennial phlox: 1st, E. A. Farmer; 2d, G. W. Strand; 3d, Frank Morris, Sr.; 4th, Mrs. F. H. Gibbs.
Collection of sweet peas: 1st, Mrs. A. A. Brown; 2d, Mrs. Geo. H. Rowe, St. Paul; 3d, Mrs. H. B. Tillotson, Eureka; 4th, Frank Morris, Sr.
Collection of snapdragon: 1st, Frank Morris, Sr.; 2d, Mrs. J. M. Scharff; 3d, Mrs. Chas. Krause; 4th, Mrs. J. F. Fairfax.
Collection of everlasting flowers: 1st, Mrs. F. H. Gibbs; 2d, Mrs. Chas. Krause; 3d, Daniel Gantzer; 4th, Lena Krause, St. Paul.

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Collection of herbaceous perennials (not less than ten varieties): 1st, Frank Morris, Sr.; 2d, G. W. Strand; 3d, Mrs. Chas. Krause; 4th, Mrs. F. H. Gibbs.

Collection of annuals (not less than fifteen varieties): Daniel Gantzer, $5.00; Mrs. Chas. Krause, $3.75; Frank Morris, Sr., $3.75; Mrs. R. R. O'Dell, Minneapolis, $3.50; John A. Gantzer, $3.25; Mrs. F. H. Gibbs, $3.00; Mrs. H. A. Boardman, St. Paul, $2.75.

CUT FLOWERS.

(Open only to members of some floral society, exhibitors to receive one-half of the amount of premiums taken, and one-half paid to the secretary of the society named.)

Collection of cut flowers, each variety in a separate vase: Minnesota State Rose Society, Mrs. F. H. Gibbs, secretary, St. Paul, $40.00; Mrs. F. H. Gibbs, $5.35; Mrs. H. A. Boardman, $4.90; Mrs. H. B. Tillotson, $4.45; Frank Morris, Sr., $4.25; John A. Gantzer, $4.00; Daniel Gantzer, $4.00; B. T. Hoyt, $3.90; Mrs. Chas. Krause, $3.55; E. A. Farmer, $2.90; Rosa B. Giesman, St. Paul, $2.80.

Collection of out door roses, three roses of each variety shown in a separate vase: John Hawkins, Minneapolis, $11.00; B. T. Hoyt, $4.00.

WILD FLOWERS.

(Open to All)

Bouquet of wild flowers: Rosa B. Giesman, $2.35; A. Brackett, $2.25; Mrs. F. H. Gibbs, $2.25; Mrs. H. A. Boardman, $2.15; John A. Gantzer, $2.10; Alvin Weidt, St. Paul, $2.00; Mrs. H. B. Tillotson, $1.90; Mrs. A. A. Brown, St. Louis Park, $1.70; Daniel Gantzer, $1.70; Lena Krause, $1.65; Mrs. Chas. Krause, $1.65; J. W. Patten, $1.65; Blanche Hagler, Minneapolis, $1.65.

Foresting a Sand Hill.

A DISCUSSION.

Mr. C. S. Harrison (Neb.): Being president of the Nebraska Park and Forest Association I am intensely interested in this work of planting in the sand hills. The work has met with marvelous success. Years ago there came up some pine in the northern part of the state, and there is now a fair young forest of pine timber right there. That land was worth fifty cents an acre, but it will soon be worth three hundred dollars an acre. That is the result of the planting of pine in that comparatively sandy desert region.

Dr. H. N. Speechley (Manitoba): At the last forestry convention in Canada, Archbishop Bruchesi, Archbishop of Montreal, told an intensely interesting story relating to the planting of the sand regions. With your permission I will read that part of the address in which this story is told.

"You all know the charming village of Oka, situated on the banks of the Ottawa. There are Indians there of whom the priests of St. Sulpice are the well known protectors and benefactors. Now this village of Oka was exposed to terrible ravages by the sand hills at the foot of which it is built. In my childhood when I used to go to this place to spend some weeks of the vacations, I remember having seen on certain days whirlwinds of sand precipitating themselves from the sand hills towards the village, which was sometimes menaced with engulfment. At other times one might see animals, in the barns, in

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the stables, almost drowned, so to speak, almost drowned in sand. For a long time some means of arresting these veritable avalanches was sought for. I might say that engineers, men of science, had been there. They had studied the problem and had been unable to furnish a solution. A priest presented himself, an old man of seventy-eight years today—at that time he was about sixty. He studied the soil; he asked if it were not possible to plant an entire forest on these moving sands. Certain pages of scientific books which he had read had made him believe that the thing was perhaps not impossible; in any case he could try the experiment, and he tried it. And, gentlemen, with what success! I wish that some fine summer day you would go and see what is now at Oka in place of those sands of which I have just spoken.

"M. Lefebre—that is his name—engaged Indians, little children, young people, to go to the distant woods and bring each one a little sapling—for there are immense pine woods in this country—to bring a little sapling, for which he gave them two sous or five sous; it was a means of making these children and these young people work. All went to work. They hunted from morning until evening for these little saplings, not more than a foot in height. And do you know how many pine saplings M. Lefebre succeeded in planting on those sands? —sixty-five thousand pines.

"When one visits this forest now—for the pines have grown, and there are some of twenty and twenty-five feet—when one visits this forest, one asks why M. Lefebre has done thus. He has planted the trees three or four feet apart. One would say that is too close. A man of science would have said this: 'Do not plant your trees so near to each other, they will injure each other and perhaps die; do not plant them in a straight line.' He did plant his pines in a straight line, and, as I have said, at very small distances apart. Why? 'See, gentlemen, this is sand. Is the forest going to succeed here?' asked M. Lefebre. 'I have my doubts; a certain number of pines may live, others will die. Well, I shall plant my pines very close to each other, so that if some die a large number may at least remain, which may contribute to produce the appearance of a forest.' He planted them in a straight line—one might speak today truly of an army of gigantic soldiers—because if he had planted the trees here and there, without order, the Indians, the savages, the children and above all the animals who went there would have destroyed those little pines; but if they were all in a straight line and formed avenues, one would respect the trees, and even the animals themselves, which have no reason but which have instinct, would follow the avenues.

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"Thus reasoned this old priest, who was no scientist. Well, gentlemen, he succeeded beyond measure; hardly five thousand pines have died out of the sixty-five thousand that he planted, and today there is a forest with its poetry, with its incomparable charm. I know it, and I love it, and it is there that each year, when I have leisure, I go to pass some days of my vacation; and after having read some books or recited our prayers on the borders of the lake, we go into this forest where silence reigns completely, to rest ourselves on a veritable soft carpet formed of millions and millions of needles fallen from the pines, which have become large. There is an odor of balsam there which strengthens you, and doctors might well send there those who suffer from lung diseases; and then, when the wind goes through these trees, there is the song, the incomparable song, which moves you, which transports you—the song of the great pines."

This is what a priest has done. He has not merely preserved a forest, he has created a forest. And now, gentlemen, I ask whether this man has not deserved to be put on record, and whether it would not be fitting that your society itself should erect a tablet commemorating a work so important and so beautiful as that which has been accomplished by M. Lefebre.

I can only give this example, but it seems to me that it is worth while. That which has been done at Oka, could it not be done in other places? Since the problem has obtained a solution there, it might well receive it equally in other parts of the country.

In this connection some lines come to my mind which were published by Mr. W. P. Reeves a few years ago. Mr. Reeves was the late agent general for New Zealand. He was a great lover of the forest, and he mourned the destruction of the forests in these beautiful lines:

"The axe bites deep; the rushing fire streams bright—
Clear, beautiful and fierce it speeds for man,
The master, set to change and stern to smite,
Bronzed pioneer of nations. Aye, but scan
The ruined beauty wasted in a night,
The blackened wonder God alone could plan
And builds not twice. A bitter price to pay
Is this for progress—beauty swept away."

(Applause.)

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SECRETARY'S CORNER

MAKE ENTRIES FOR THE ANNUAL MEETING.—The amount of fruit being placed in cold storage for the coming annual meeting indicates a large exhibit, and on this account especially members are urged to make their entries early that there may be plenty of time in the office to do the necessary clerical work connected therewith. The premium list will appear in the program, which should be in the hands of the members at least twenty days before the date of the meeting. Entries should be made promptly upon receipt of the program.

MAJESTIC HOTEL THE SOCIETY HEADQUARTERS.—This hotel, on Seventh Street near Hennepin Avenue, has been again selected as headquarters for the society. It is a convenient place of meeting, and has been found a comfortable stopping place. Rates are noted in the program. Members are urged to make reservations of rooms beforehand at as early a date after receipt of the program as possible, so that there may be no disappointment in securing accomodations. State when you will arrive and when depart, and how many rooms you want, and the proper reservation will be made.

FLORISTS AT THE ANNUAL MEETING.—The Minnesota State Florists' Association are planning for a period on the program of the annual meeting, probably the last part of the forenoon of Wednesday, December 8th. There will be in connection with their short practical program—which will deal with subjects not of technical but of general interest—a fine exhibit of plants and cut flowers. Probably no finer showing of home-grown greenhouse flowers, as regards quality at least, will have been made in Minneapolis than will be on exhibition at that time. Don't fail to be present and enjoy this special session.

PROGRAMS READY NOVEMBER 15th.—The program of the annual meeting is rapidly nearing completion, and will be ready for mailing about November 15th. It will be found a very diversified one, something for every horticultural interest of importance in the state. The number of valuable auxiliary societies now connected with the association makes it possible to thus diversify the program and bring together the various elements of our work in such a way as to intensify interest in each department The unusual number of authorities on horticultural topics who will be in attendance should be noted, and a study of the program should confirm the reader in a purpose to be present at the meeting from beginning to end.

PASSING OF JUDGE BAKER.—The death of Judge D. A. J. Baker was announced in the press of the Twin Cities early in the month, the exact date of this event having escaped notice of the writer. Mr. Baker had lived to an advanced age, somewhere well along towards ninety years, most of which had been passed in the vicinity of the Twin Cities, and on his home not far from Merriam Park. Mr. Baker in an early period of the history of this society was one of the regular supporting members, always found at the meetings and bearing a large share of the burden of the work. Of late years he has not been a member of the society, though his face was occasionally seen at the meetings, and especially at the summer meetings. Those who attended the meeting of the society last summer at the Experiment Station will recall the vigorous words of Judge Baker as he impressed upon the audience the honorable character of the occupation of the farmer, "the coming man and who is to be looked up to." We shall miss Mr. Baker's attendance at the meetings, but the work that he did in the years of his greatest vigor is still living, and the fruits thereof are apparent on every hand. If possible, a suitable obituary will be prepared in memory of this early and earnest worker.

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CAPT. A. H. REED, GLENCOE, MINN.

(See opposite page.)

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THE MINNESOTA HORTICULTURIST

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Biography of Capt. A. H. Reed.

GLENCOE, MINN.

Capt. A. H. Reed is the son of a New England farmer, born in the town of Hartford, Oxford county, Maine, March 13th, 1835. His paternal great-grandmother was Sarah Bradford, a direct descendent of Gov. William Bradford, of the Mayflower. He severed his connection with farming when nineteen years of age and struck out for the west, landing in Minnesota in the fall of 1855. In the spring of 1856 he went to Glencoe, where he commenced his horticultural work that spring by planting a vegetable garden and raising a fine crop of cucumbers. In the spring of 1857 he commenced to experiment in raising fruit by setting out one thousand apple root-grafts, for which he sent to Rochester, New York.

Captain Reed possesses an iron constitution and has endured all the hardships of a pioneer's life on the frontiers of Minnesota. He has carried on many business undertakings to success. He still owns and operates two fine farms adjoining the village of Glencoe and has the largest and finest orchard of bearing apple trees in McLeod county. At one time he had his farm stocked with a herd of thoroughbred Holstein cattle and for several years was the largest wheat raiser in the county. While conducting for thirty years a large mercantile business, with several other business enterprises, he has constantly tilled the soil every season from 1855 to the present, except the four years he was in the military service, during the War of the Rebellion, and he believes it the duty of every man that can obtain a piece of land large enough to produce all he and his family needs.

He is an honorary life member of the Minnesota State Horticultural Society and has been a constant attendant at its meetings for many years.

After passing sixty years of active life he concluded that his town should have more than one transportation line and undertook to build nearly three hundred miles of railroad from Duluth to Albert Lea,

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Minnesota, to connect with the Illinois Central Railway, and let the contract for the construction of fifty-two miles from Albert Lea to Mankato, when one of the great railroad corporations in the state, through its officials, notified him that he was "invading our territory." Still the work proceeded until nearly forty miles were graded, when the operating railway corporation bought out the contractor who was building the competing line and compelled the promoters of the Duluth, St. Cloud, Glencoe & Mankato Railway to sell out, and thus a great public enterprise was killed.

Mr. Reed, then in his early prime, at the age of twenty-six, was among the first to volunteer from his county, enlisting in the Second Minnesota Infantry, at Ft. Snelling in 1861. He served in the several grades of duty and orderly sergeant, sergeant major and was commissioned a lieutenant at Marietta, Ga., after his three years of service in carrying a knapsack and musket, without being absent from duty one day, except while suffering from wounds received at the storming of Missionary Ridge, Nov. 25, 1863. At that battle, by direction of his colonel, he commanded his company (K), which occupied the position of color company in the Second Minnesota regiment, and held the post of honor, covering Vandivers Brigade in the front line in the storming of Missionary Ridge.

After reaching the top of the ridge he was stricken with a rebel bullet. The wound resulted in the loss of his right arm, yet he refused his discharge, rejoined his regiment and served through Gen. Sherman's campaigns against Atlanta, his march to the sea and north to Washington, when he was promoted to the command of a company in the Twenty-Third Missouri and was soon mustered out at Fort Snelling at the close of the war. No soldier who served through the war has a more meritorious record.

Returning to Glencoe, his subsequent career has been marked by the business success which was due to his ability and the energy of his character. Farmer, merchant and banker, the monuments of his enterprise and public spirit are conspicuous in the business institutions of that village. As chairman of the board of county commissioners and president of the village council, he rendered valuable public service to his town and county. He served for two terms as sergeant-at-arms in the Minnesota house of representatives and one term as representative, during which he secured an important railroad for Glencoe and an appropriation of swamp lands for an important institution of learning at the same place. In 1886 and 1888 he

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was a candidate for congress in the third district and received a strong popular support, which bore testimony to the high estimation in which he is held.

Capt. Reed, though now over seventy-four years of age, is still a rugged, hearty and well preserved man, and may reasonably expect yet many years of action. As a friend and earnest supporter of our society, we anticipate much service still from this veteran in many fields of endeavor. It is a pleasure to know this strong man, on whom we may surely depend in time of stress.—Secretary.

Some New Fruits Originated at the South Dakota Experiment Station.

PROF. N. E. HANSEN, BROOKINGS, SOUTH DAKOTA.

A few notes on some of my new fruits which are ready for preliminary distribution may be of interest at this time. I have chosen names for these fruits from the Dakota Sioux Indian language, as they are in part of native origin.

Tokeya.—Tokeya means "first." Introduced in the spring of 1907 as South Dakota No. 7. It is a hybrid of the Sioux Indian sand cherry, Prunus Besseyi, with the Chinese apricot, or apricot plum, Prunus Simoni. Prunus Simoni is a distinct species from either the apricot or the plum, but appears nearer allied to the apricot than to the plum. It is raised in California and often marketed as a California plum. In the Tokeya we have a most remarkable hybrid fruit, the female parent being a dwarf bush with fruit one-half inch in diameter; the male parent, a tree averaging in size with the apricot and plum tree, and the fruit large enough to be sold in the markets as a California plum, and remarkable for the flat shape of fruit, rich, spicy fragrance, firmness and good, although peculiar, quality of flesh. The hybrid bears fruit freely on one year trees in nursery and fruited first in 1906, the original tree having been cut to pieces in propagation. Fruit so far one and three-eighths inches in diameter, dark red, flat fruit with green flesh of good quality, pit remarkably small for the size of fruit.

Hanska (Sioux Indian for "tall").—Introduced in the spring of 1908. A hybrid plum, a half sister to Tokeya, having the same sire; the female parent is the wild plum of the prairie Northwest, *Prunus Americana.* This produces an extremely vigorous plum tree, excelling in rapidity of growth any variety now grown in North-

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western prairie nurseries or any wild plum so far as observed. The three-year tree in crowded nursery row runs up to twelve feet; a two-year tree is really too heavy to bill in with three-year old apple trees. The fruit follows the male parent very closely in shape, color, quality, firmness and fragrance; the size, however, is only one and a half inches in diameter on two and three-year trees in nursery row. I have 15 or 20 seedlings of this pedigree which resemble each other very closely in character of tree and fruit. Nurserymen will appreciate the variety as it will save one year in propagation.

Sapa (Sioux Indian for "black").—A hybrid plum seedling introduced spring 1908. The female parent is the Sioux Indian sand cherry, Prunus Besseyi; the male parent, the Sultan, a very large hybrid plum, mainly of Japanese parentage, with blood-red or purple

Tokeya.

color of flesh, originated by Luther Burbank of California. A most remarkable hybrid, approaching a plum tree as observed in nursery row, but the one year trees running five feet in height in nursery are full of fruit buds. First fruited in 1907 on a short spur on the original tree, which was very much mutilated in propagation. Fruit a good inch in diameter, dark purple, and the flesh of the intense purple or blood-red color of the Sultan. Pit very small, much approaching that of the cherry. Here we have a new type of fruit. I have many other hybrids of the sand cherry with Japanese plums, of which fruit is expected the coming season, the original trees having been cut to pieces in the work of propagation.

Skuya (Sioux Indian for "sweet").—Hybrid plum introduced in the spring of 1908. The male parent is De Soto, one of the best of our native plums; found wild many years ago near De Soto on the banks

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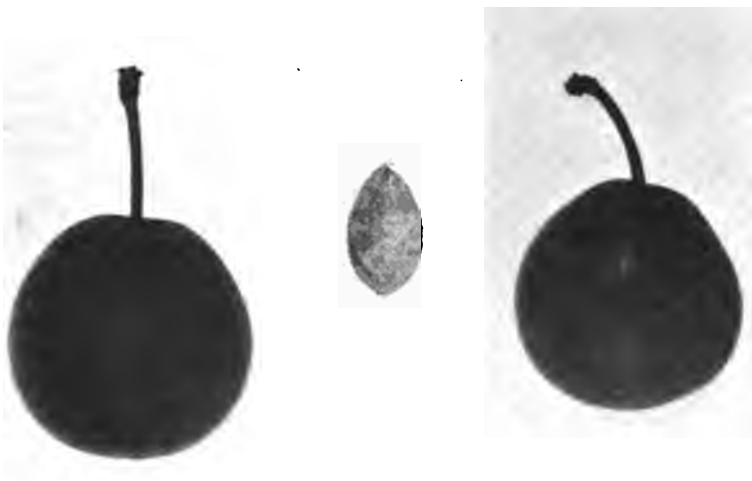
of the Mississippi river, in southwestern Wisconsin. Female parent the Red June, a large, early Japanese plum. First fruited in 1907. The first fruits are rather dull in color but delicious in quality and with firm flesh.

SUMMARY OF SAND CHERRY HYBRIDS.

The western sand cherry (*Prunus Besseyi*) is found wild on the plains of South Dakota and ranging from Kansas to Manitoba and west into the Rocky Mountains. Many thousands of seedlings have been raised, and the best fruit has been obtained from the fourth generation under cultivation at Brookings. The largest of these selected seedlings bear fruit one inch in diameter and of good quality, the flesh being free from acerbity so common in the wild fruit. By simple selection, then,



Sapa

it has been possible to secure a fine, edible cherry from this dwarf cherry of the western plains. But the plants attain a dwarf stature, and no mutation in the line of giant growth has yet appeared. Hence to hasten this work, hybridization has been resorted to on a large scale. So far hybrids have been fruited of the sand cherry with native plums, Japanese plums and Chinese apricots, some of which are extremely promising as they combine the small size of pit of the sand cherry and the extreme hardiness of that species with large size of tree and fruit of good quality. Hybrids have also been made of the sand cherry with the purple-leaved plum of Persia, Prunus Pissardi, a purple-leaved Myrobalan plum, now popular in European and eastern

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American gardens. The Persian plum is the sire and has transmitted the wonderfully rich color of the foliage to the sand cherry. This hybrid was introduced in spring of 1909 and bids fair to add a richly colored ornamental shrub to our prairie gardens.

I have been making strenuous efforts to hybridize the sand cherry with the common apricot and the peach, but there has not been time to secure fruit from any of the seedlings obtained.

Skuya

Many other hybrids of the sand cherry with allied species have been secured, but they are of too recent origin to permit fruiting. Unexpected results are sometimes obtained. For instance, a hybrid of which the sand cherry is the female parent and a sweet cherry the male parent. The union of these two species appears to have been effected with the greatest difficulty. One-year-old plants on native plum stock are only six to eight inches high in nursery row.

Methods.—My non-patented way of making these remarkable combinations is to have a portable orchard of some three thousand potted dwarf trees on wheels, which is taken into two specially constructed cellars every fall, and the crossing work done later under glass. I do not advise any one of you to do that because it means tons of earth to be moved and a great lot of troubles, trials and tribulations. But out of all this work I hope to get some varieties that will win a place on the recommended fruit-lists of the prairie Northwest.

Hybrid Raspberries.—I first tested all the common sorts of raspberries and found none able to endure forty degrees below zero Fahrenheit without winter protection. Since then I have endeavored to originate a raspberry to meet this need.

Some seven thousand seedlings have been fruited, and as many more are coming on. The only one named so far is the Sunbeam, which was sent out in the spring of 1906 for the first time. It is a hybrid of a wild red raspberry from Cavalier county, North Dakota, near the Manitoba line, with the Shaffer (Shaffer's Colossal) from New York, the latter being the male parent. It is a strong plant-maker and usually bears well the first year, although this is not advisable. The Sunbeam has endured the winter at Bismarck without any

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protection, and I trust it will serve as a busy farmer's raspberry until we get something larger and better.

Some other promising raspberries with larger fruit are running their second heat, but they will be given a third and fourth heat before distribution elsewhere.

Pomological Crutches.—I believe we must have raspberries and other fruiting plants that need no winter protection. Any plant that must be coddled and nursed is simply a horticultural molycoddle. We want something that will need no winter protection. We must not tell people that they must plant raspberries and then hasten to tell them that they must put them to bed and cover them over carefully, so they will not get cold. It is *horticulture on crutches* and hence undesirable, not a good way. The Sunbeam endured forty degrees below one winter and forty-one the next winter without protection.

Pure Native Plums.—Some six thousand native plums have been fruited. Some have been named: the Wastesa(Sioux Indian for "delicious") ; the Yuteca (the Sioux for "to refresh") ; the Zekanta (which means "yellow plum") ; the Huya (which means "eagle") ; the Topa (which means "four") ; and then I have two very early varieties, the Winnipeg and Assiniboine, raised from seed brought from Manitoba. All these are pure native wild plums of good size and quality, but final judgment must be reserved. I believe that a mingling of blood of the plums of the world will give us the most enduring plum in the end. The wild plums are good in their way, that is, the best ones are good, but equally hardy plums with the large, firm-fleshed California plum, or with the apricot plum of China, would soon leave the wild plums far in the rear.

Summary.—At the South Dakota Experiment Station the orchard and small fruits of three continents, North America, Europe and Asia, are being studied and hundreds of combinations being made each year in the endeavor to combine the hardiness of the native with the size and quality of the cultivated species. Whoever selects the parents with the greatest amount of foresight as to their behavior under hybridization will originate the varieties that will replace those now cultivated.

We must never rest satisfied with the fruit we now have. Our God-given work, as I understand it, is to improve upon Nature's handiwork.

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Notes on the Apple Trial List.

CLARENCE WEDGE, NURSERYMAN, ALBERT LEA.
(Southern Minnesota Horticultural Society.)

Unlike some of the horticultural societies of sister states the Minnesota society has regularly put forth a recommended fruit list since the annual meeting of 1873. Imperfect as such lists necessarily are, they have, we believe, been of great value to our average orchardist and have done a great deal to hold the attention of both nurseryman and planter to the better tested and reliable sorts; and scattered broadcast, as they have been by the farmers' institutes and nurserymen, have been one of the best advertisements of our society. The society has moreover been exceedingly fortunate in its recommendations. Nearly all the varieties that have been admitted to the standard list for general planting having proved themselves very useful in our northern orchards. The trial lists put forth by the society are selected with great care from the newer candidates for public favor, and have been a sort of waiting probationary station out of which approved varieties are chosen for the standard list as they show themselves worthy.

The first trial list adopted by the society was in 1873 and was made up of the following varieties: Red Astrachan, St. Lawrence, Fall Stripe, Perry Russet, Talman Sweet, Golden Russet, Little Romanite.

At this time only two really profitable kinds were on our list for general planting—the Duchess and Tetofsky. This trial list was made up entirely from the varieties of the eastern states and, as has proved true of all that class, not one of them "made good."

The trial list of 1888, twenty years ago, was as follows: Red Cheeked, Plikanoff, Antonovka, Yellow Anis, Red Anis, Yellow Transparent, Russian Green, White Pigeon, Soiree, McMahon.

This list shows the influence of the Russian movement, all but the last two being of such importation. It certainly represents a great step in advance of the list of 1873, as several of these proved good, sound trees, able to live out our climate and produce heavy crops of fruit.

Ten years ago our trial list was made up as follows: Patten's Greening, Okabena, Peerless, Kaump, Brett, Blushed Calville, Repka Malenka, Anisim, Yellow Sweet, Gilbert, Christmas, Cross, White Pigeon.

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In this list there is manifested considerable progress in the most hopeful direction, five of the varieties being seedlings of northern origin. Four of these trial varieties have since taken their places on the standard list while Gilbert and Yellow Sweet are still retained on trial.

The present trial list is as follows: Evelyn, Eastman, Milwaukee, Newell's Winter, Jewell's Winter, Windsor Chief, Salome, Gilbert, Yellow Sweet, Lowland Raspberry.

Latest addition to the Wedge Nursery.

The first six varieties named are seedlings of northern origin. The Salome is a half northern seedling, and the Russians are reduced to only three varieties.

The Evelyn is the latest addition to this list, being a seedling of the Wealthy, originating near the home of the Wealthy, at Excelsior, Minn., by the late H. M. Lyman. The following description is kindly given us by his son, A. B. Lyman:

"The Evelyn is from Wealthy seed planted in 1876. The fruit will average as large as the parent and is an all winter apple. We pick it the same time as the N. W. Greening, and it holds as well to the tree. Color, a dark red, like the Hyslop, on the young trees and top grafts, but does not color as well on the old tree, as it is rather in the shade. It is a good fruiter, and the old tree has borne

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each season. Has a good, large leaf, and has not blighted. Have a lot top-worked, and this is a good test for blight, as there is an extra growth. Some Wealthy grafts of the same sort blighted badly. The trees do not hold their foliage in the winter, and the wood ripens well for a late apple."

The Eastman, which has been on this list for two years, was originated by C. G. Patten, at Charles City, Iowa, and is a variety that is especially promising as a commercial fruit. It is described as follows by Mr. H. G. Patten, who has had a large experience in handling apples on the market:

"The Eastman we consider fully as hardy as the Wealthy, a good grower, perhaps a little inclined to be crooked, but not so much so as the Patten's Greening, and grows to be a spreading tree with well forked limbs. The apples do not cluster to any considerable extent but are scattered generally over the limbs. It is fully as large as the Duchess, but runs much more even in size. I do not believe in shipping that it has ever been necessary to throw out a half peck of small apples to the barrel. The color is in a general way very similar to the Duchess or Iowa Beauty, but very much richer. It is without exception the most attractive fruit in the barrel of everything that we raise here in commercial varieties. The fruit hangs well to the tree, better, I think, than any of our northern commercial apples that I know of. Quality is good as a dessert or cooking apple. The commission men tell us that it is a very fine fruit-stand apple, and that they have no trouble in selling it at an advance of 50c to $1.00 per barrel over Wealthy. The tree is a very heavy bearer, and while it will not fill as many barrels as the Patten's Greening, we believe that it will bear as many apples."

The Milwaukee is a seedling of Duchess originated near the city from which it is named by Geo. Jeffrey, a prominent fruit-breeder of Wisconsin. The tree appears to be of about the hardiness of Wealthy, very free from blight and an exceedingly heavy cropper—we know of none more so—and yet a variety that maintains its health and vigor in spite of such excessive drains. The fruit is of full medium size, dull red striped, and flatter than any other variety of large apple we have grown. Its flesh is fine, melting and of pure and very sharp acidity. It is well liked by those who prefer an acid apple. The core is exceedingly small. It keeps fully as well as, perhaps better than, the Wealthy. We consider it a very worthy fruit, one of the best on the list.

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Newell's: Originated near Baraboo, Wisconsin, and appears to be a seedling of Perry Russet. The tree is a good, rather upright grower, fairly hardy but probably not equal to the Wealthy. We have had this tree for seventeen years in a very favorable situation, and it has yet to bear its first good crop. As a branch top-worked on Hibernal it has borne well for many years. Fruit is about medium size, conical, dull yellow, much inclined to rough spots and imperfections, so much so as to largely disqualify it for market. Flesh firm, flavor rich sub-acid, very good. Keeps easily till mid winter. This apple on account of its good keeping and excellent quality may have a small place in the home orchards of Southern Minnesota.

Jewell's Winter: Described by E. A. Smith, of the Jewell Nursery Co.: "Jewell's Winter is one of the Thompson's seedlings (No. 24), secured by our firm from the original orchard at Grundy Center, Iowa, many years ago; one of the six varieties of the lot that have proved most satisfactory. Tree hardy, vigorous, an early and prolific bearer, holding its fruit firmly to the tree in the severest winds. A splendid nursery tree, as hardy as the Wealthy. Fruit large, rosy yellow; flesh white, tender, crisp, juicy, mild sub-acid; flavor good. One of the best late keeping varieties."

Windsor: Another Wisconsin seedling. This tree is nearly or quite as hardy as Wealthy, and although it is classed among the blighters, has not behaved as badly with us as the Wealthy, although mixed with that variety in our orchard. A rather slender, upright grower, making a handsome orchard tree that somewhat resembles the Wealthy. It has not as yet proved either an early or heavy bearer with us, but from a somewhat extended correspondence with those who have had it in bearing longer we learn that it in time becomes a good, regular, annual bearer. The fruit is of medium size, entirely covered with rich red; flesh firm; flavor a rich sub-acid; keeping all that could be desired. Really the fruit is in shape, color, size and quality much like a highly colored eastern Baldwin. We think so well of it that we are top-working a large number of our discarded orchard varieties to it, expecting to grow a choice, handsome winter apple for the local market and for our own cellar.

Salome: An Illinois seedling, which we think little if any hardier than Ben Davis. A handsome, growthy tree, a good bearer, and one that has had considerable trial in our county, where it is looking well in orchards where Gano and Grimes' Golden are also flourishing. Fruit of scarcely medium size, conical, striped, of good quality and a first-class keeper. In our judgment it is deserving but a very limited trial and that only in southern Minnesota.

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Gilbert: This is a tree of obscure origin, thought to belong to the Russian list, that we believe was found in the old Jordan orchard near Rochester, Minn. As a tree it seems to be all that could be desired, bears young and by Mr. Howard, of Hammond, Minn., is considered of better quality than Okabena, which as a fruit it much resembles in season and general appearance and, like it, would sell for Duchess. Indeed this variety, which has been on the trial list for thirteen years, would doubtless have come into more general planting had it not been overshadowed by so many varieties, especially the Okabena, of similar quality and season. In spite of its long opportunity on the trial list, we do not know of a nursery that is now propagating it, and it would seem high time to bring its period of probation to a close.

Yellow Sweet: One of the early Russian importations, that has been on the list twelve years. In tree this variety is simply perfect in form, health and hardiness. It blossoms profusely almost every year, but for some reason seldom sets a full crop, but can annually be depended on for a moderate supply of fruit if given plenty of room in the orchard, and what fruit it does carry hangs to the tree till fully ripe. Fruit medium in size, light yellow, with occasional bronze cheek, ripening about with Duchess. A fine fleshed, pure flavored fruit that pleases all who like a sweet apple. It does not bear freely enough to make it a market apple, but as we have nothing better of its character and season to take its place, and as it is everywhere reliable in tree, and as good a sweet apple of its season as is grown anywhere, we would favor placing it on the standard list till something better of its kind and season appears.

Lowland Raspberry: Also one of the earliest of the Russian importations, which has been on trial in various places in the state, and has appeared on this list for five years. Tree of fine, upright form, making a good nursery tree, and a beauty in the orchard. Free from blight and about as hardy as Wealthy. An early and regular bearer, but not one of the heavy croppers. Fruit medium size and light waxen yellow, most beautifully splashed with light red. One of the most attractive apples grown in our latitude and as good as it is beautiful. Mild sub-acid with peculiar, refreshing flavor, hangs well to the tree and has a long season, beginning to ripen with the Tetofsky and continuing through and after the season of Duchess. One of the best varieties we have in our home orchard, where it has been planted twenty-one years. Stark Bros., the large Missouri nurserymen, are pushing this variety, especially praising its quality. If desirable where such a long list of apples can be grown, it ought to be doubly so with us of the north.

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Pruning Shade and Ornamental Trees and Shrubbery.

THEO. WIRTH, SUPT. OF PARKS, MINNEAPOLIS.

There should always be a reason, a certain desirable object in view, when a tree or a shrub is subjected to pruning. Too much of it is done simply because people think it is customary without knowing of any plausible reason to justify that custom. Those adherents to the customary rule of pruning are in evidence wherever we go, for their victims are staring examples of tree and shrub mutilation in the highest degree.

There are two different classes of tree butchers, and while both may do equal damage they are prompted by different motives. The lineman of a commercial telephone, telegraph, electric light or other company, slashing out its right-of-way, does his damage in defiance and absolute ignorance of the rights and needs of the trees and their owners. It is useless to expect to educate him to a different view on this subject; the only thing to do with him is to eliminate him through a strictly enforced ordinance. The other tree butcher, less willful and ignorant, has no special object in view when he prunes or, if he has, does not know just how to do it.

I take it that the object of my remarks should be to explain to the best of my ability why pruning should be done, when and how. Let us start with trees. What are the reasons, the needs for the pruning of any tree? There are several.

1st. A tree may have to be pruned to confine its growth within a certain limited space.

2d. To afford better passage of sunlight and air through its crown of foliage, this being too dense and crowded.

3d. Because the tree is affected with a certain disease on account of which it is full of dead branches and twigs.

4th. On account of damage, sustained through storm or other adverse circumstances or conditions.

5th. On account of age and neglect.

6th. Because the tree is moved from one location to another, that is, transplanted.

To confine the crown of a tree to a desirable limit of space, such tree will not necessarily have to be cut back periodically, the same as we might trim a hedge. The proper thing to do is to remove some branches altogether wherever they can be spared, to cut others back one-quarter or one-third of their length, and to leave the rest undisturbed so that their branches and twigs may gracefully hide as

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much as possible the pruning which has been done. Through such pruning the size of a tree can be well controlled, and the tree will always be clean and vigorous in growth.

For the proper passage of light and air nearly all trees around an habitation or on streets need, from time to time, a certain amount of pruning. This simply means the removal of surplus and dead wood. My experience is, that a healthy, vigorous tree, under proper care, should receive such a pruning about every four years. Ordinary intelligence and common sense observation will tell us what is superfluous and dead wood in a tree. Just let the distribution of branches and twigs be as even as possible and loose enough to let through a little sunlight. It is better for the tree, for you and your house that is under or alongside of it.

Disease, decay and ravages of insects will undermine the vitality of a tree in a short time, but pruning that will remove the affected wood partly or wholly will bring new life and strength in the less affected and healthy parts of the tree and will so help to overcome what ultimately would mean death.

The same treatment will greatly prolong the life of old, declining trees. The root system may be in excellent condition and may be stimulated in its functionary actions through proper cultivation and the application of fertilizers, but the upper structure is, for many reasons, denying the proper passage of the sustaining powers from below. A timely, heavy pruning will create a new system of conducting branches giving the tree new life and vigor.

It is almost impossible to transplant a tree, small or big, without seriously interfering with its roots; therefore it is unreasonable to expect a tree to sustain its upper structure entire when we disturb and reduce its life-giving lower structure, the root system. There are serious mistakes made in this respect in the handling of trees. For instance, we see trees of considerable size planted with roots cut off to almost fit a posthole, and not a single branch left—a regular pole. What is the use of planting such a tree? A two-inch tree with nearly all its roots and half its branches will make a better tree in a shorter time than this offensive signpost of greedy, ignorant ambition to secure a full sized tree in no time and at no cost. Then again, we see trees planted of, say, 6-inch calibre or more with a root ball reduced for a 3-foot hole and with the entire crown left unreduced. This is not so bad as the former but will seldom bring satisfactory results. Sound reasoning, taking into consideration the very evident and simple principles of plant life in general, must teach all observant

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lovers of trees that there must be retained a certain harmony and proportion of the root and crown system in order to sustain life during the period of transplanting.

This much for reasons and purpose of pruning trees. Now as to the action of pruning itself as an operation. There are certain important rules which apply in all cases alike, and they are as easily explained as they can be understood and remembered. They are, in short, as follows:

1. All branches or twigs taken out must be cut close to the wrinkle, leaving no stump whatsoever.
2. The cut must be clean and smooth, and all cuts of any size should be covered with paint or some other preserving compound that will prevent decay. Such wounds will easily heal and grow over with bark in a comparatively short time.
3. In cutting back branches or twigs the cut should always be close to a branch, twig or eye from which we may expect new growth. Do not leave any stubs.
4. Leave as few forks as possible, be satisfied with one branch and cut the other off close to the fork. In this way we do away with all possible decay.
5. As to the best time of pruning, same had best be done during the dormant period, yet pruning can be done almost any time without any serious damage to a tree. The least desirable time, of course, is the sapping time.

The pruning of shrubbery is, in most respects, based upon the very same principles as laid down for the pruning of trees. Assuming that the shrubs we have planted for the ornamentation of our grounds have been selected for certain purposes for which they are especially adapted, our aim in pruning must be to keep them in clean and healthy condition, to restrict their growth if necessary within certain bounds, to increase their productiveness in flower or fruit and to keep them young in spite of age. Unless we have some such object in view we had better not prune them at all, for they will look ever so much better in their unrestricted growth than they will if clipped like a horse's tail, defeating, as such clipping will do in most cases, the very purpose for which they were planted.

We can divide our ornamental shrubs, as far as pruning is concerned, into two main classes.

Class 1 covers the shrubs which outside of the desirable removing of past flowers and seed vessels need no other pruning than such that will keep them within bounds and young. This is by far the most numerous class, including amongst others the following:

Amelanchier Canadensis (Juneberry),
Amorpha fruticosa and fragrans (false indigo),

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Aralia pentaphilla,
Berberis Thunbergii vulgaris and atropurpurea (or Japanese, common and purple barberry),
Caragana arborescens (Siberian peatree),
Corylus Americana (hazel or filbert),
Clethra alnifolia (sweet pepper),
Cornus (dogwoods),
Euonymus atropurpureus (Waahoo),
Hamamelis Virginiana (witch hazel),
Ilex verticillata (black alder),
Lonicera (bush and Tartarian honeysuckles),
Ptelea trifoliata (hop tree),
Rhamnus catharticus (buckthorn),
Rhus (sumachs),
Symphoricarpus racemosus (snowberry),
" vulgaris (Indian currant),
" occidentalis (wolfberry),
Syringa (lilacs),
Viburnum acerifolium (arrowwood),
" lentago (blackhaw),
" opulus (high bush cranberry),
" opulus sterile (snowball),
" cassinoides,
" lantana,
Rosa, most all different native wild roses.

All of these shrubs will be improved in appearance if we remove their dried up flowers, seed vessels and fruit, an operation which may come under the head of pruning. The only other pruning they require at intervals of years will be with the object in view to keep them young and vigorous and within certain bounds of growth. This can be done by removing some of the oldest wood entirely and by cutting back some of the strongest remaining wood, leaving a good part of the plant undisturbed so that some branches will be left to retain natural appearance as much as possible.

Class II embraces the shrubs which through proper specific pruning will produce better foliage, flowers and fruit.

This class we may divide into three different divisions, namely:

Div. A. Shrubs that we should prune during winter or early spring and which should not be pruned back too radically, the primary object in view being to give strength to the flowering wood at the expense of the blind wood, producing foliage only. In this division we name:

Ceanothus Americanus (New Jersey tea),
Kerria Japonica,
Philadelphus (mock orange),
Rhodotypus kerrioides,

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Rubus odoratus (bramble),
Sambucus (elder),
Spiraea opulifolia and sorbifolia,
Weigellas, etc.
These shrubs should be pruned in winter or very early spring.

Div. B. Some shrubs that flower on the young wood which they produce first before they bloom should be pruned back very severely in order to produce quality of bloom. Hydrangea paniculata grandiflora; hibiscus (rose of Sharon); spireas Anthony Waterer, bumalda, callosa, billardii, and Douglassii; rosa rugosa and, so-to-speak, all the hybrid perpetual roses produce the best blooms and maintain continuous vigor through very radical pruning before the breaking out of spring growth.

Such plants must be relieved of fully one-half to two-thirds of the wood produced the previous year, and the remaining shoots cut back to from three to five live eyes. I do not say that this is necessary to produce flowers and foliage, but I do claim that such radical treatment will produce the best quality of blooms and will furthermore keep the plant in a vigorous, healthy condition.

Div. C. We have some shrubs which should never be pruned during winter or spring, because such pruning would at least partly if not wholly deprive us of one year's production of flowers. Such plants as deutzia gracilis, forsythias (golden bell), ribes aureum (Missouri currant), spiraea arguta, thunbergi, Van Houteii and prunifolia (bridal wreath) will flower on the wood produced during the previous year; consequently if we cut back that wood in the spring we lose the flowers. Such shrubs should be pruned immediately after their flowering season is passed. This will force and enable the plant to produce new flowering wood for next year.

I am sure we all believe in the saying, "What is worth doing at all, is worth doing well," and therefore I claim that he or she who undertakes to manipulate a pruning saw or pruning shears should have a certain well defined object in view. The operator should know first what he operates on; that is, he should know the plant and its habits, and he should know why he operates, and what he wants to accomplish. If he is clear in his mind as to those points, a little observation and thoughtfulness will tell him just how to proceed.

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The Ponderosa, or Bull, Pine.

C. S. HARRISON, YORK, NEB.

(President Neb. Park and Forestry Society.)

Defending the Home.—Years ago a man came to me with tears in his eyes and said: "There is a man prowling around my house who has stolen the affections of my wife and is breaking up my home, and I don't know what to do about it."

"Do," said I, "Give him a half mile ride on the toe of your boot."

"Oh! I can't do that."

The result was the man stole his wife, broke up his home and then proceeded to kill the poor woman by inches. She lived about two years in martyrdom.

It is a man's business to defend his home from every menace or danger of any kind. That is what he is for. He should protect from all moral and natural attacks. If his home is out on the great prairies of the bleak northwest, he should defend it from the fierce assaults of old Boreas, who comes down upon him with all the howling demons of the storm, wielding the stinging lash of the north winds, venting all his fury on the defenceless. How to do this is the object of this paper.

The Pinus Ponderosa, or Bull Pine.—This is also called Pinus Engelmani, Pinus Jeffrey, western yellow pine and Colorado pine. Its habitat varies from the eastern foothills of the Rockies to the Pacific Slope, also reaching from northwest Nebraska all over the Black Hills. It varies in size according to location. In California it reaches immense proportions. In Colorado you sometimes find them four feet through and seventy-five feet tall. It is a rapid growing tree, which makes the grain conspicuous when the lumber is dressed. In Pueblo I had my house finished with it and never had better material for that purpose. It is one of the most robust and vigorous trees we have. It will thrive in sand and among rocks and on barren cliffs. On account of its sturdy appearance and robustness, defying blizzard, storm, drouth and burning heat, it is called the bull pine. It is remarkably adapted to western conditions. In northern Nebraska and Colorado you will find it, like the cliff dwellers, on barren cliffs or stony hillsides, where nothing else will grow. Sometimes you find it on the walls of precipices sticking its toes into the crevices, waving defiance to wind and storm. There is probably no tree that will endure more prolonged dry weather than this. Last summer in the east after only three months of drouth, many of the pines and firs

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commenced dying. This shows the folly of planting eastern trees in the west. This tree seems endowed with almost human intelligence. It will grow on barren spots, where there is no other vegetation, to be safe from fires. If it had not been for this enemy all of our western plains would have been covered with it.

One fall, in the mountains, on a rocky and steep hillside, I noticed a group that seemed to be dying. I thought this strange for such

Bull Pine well established—making two feet a year.

hardy trees. I examined the spot. There had been two years of very dry weather. What water fell ran off, so that very little could reach the roots. Apparently the trees held a consultation and said, "Now, we can't carry all this burden; we must drop some." So they were shedding about three-fourths of the needles and saving the rest. They got through all right.

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Two hundred feet from an irrigating ditch that same fall I saw a group of the same variety with most luxuriant foliage—hardly a needle changing color. Having occasion to dig near the ditch I found the ground full of roots which were pumping water into those distant treetops.

This tree is especially designed for its place and mission. Its needles are long and glossy. No evergreen with soft needles, like hemlock, or white or Scotch pine, can endure conditions found on our western prairies. The terrible heat and the withering siroccos do not affect the ponderosa. I do not recall a single tree once firmly established that ever succumbed to unfavorable conditions. Sooner or later our western and northern prairies will be dotted with them. When the prophet of the present has become dust, some of you will remember his prophecy.

A Caution.—We are often deceived by a name. We say a tree is a tree no matter where it came from. Because they were cheap, Nebraska people sent to southern Illinois for red cedars. Red cedars, they said, were hardy anyway. But those all died while their own Platte cedars survived. Plant in Minnesota seeds of white spruce and white pine from Maine and see where you will land. Plant Kansas box elder in Manitoba beside their own, and you will have tree funerals. Plant Manitoba white spruce in Oklahoma, and you plant a failure. Now we have had to find this out often by bitter experience. If you want seeds for western Kansas get seeds from the nearest foothills; plant the same seeds in your Minnesota Experiment Station, and you fail. For the north, get seeds from the Black Hills or the highest altitudes of the Rockies. In the mountains these trees grow all the way from the base to an altitude of 10,000 feet. As you climb, you go from the temperate to the frigid zone. For instance, the oak is of fair size at the base, but as you go up it will grow smaller and smaller until it is the size of a currant bush. Picea pungens, Engelman, sub-Alpina, consorta and aristarta, with the flexilis, are children of the cold and the storm king and so are hardy in the north. There are splendid forests of the Engelman up near timber line, and those are the trees for Manitoba. Now, we must understand the great law of adaptation. What we want is a tree that will endure the vicissitudes of our western climate, and Providence has given such a wide range we can easily choose seed from a region analagous to our own. The jack pine is a rapid growing tree, but it cannot endure the dry winters of our western plains. Only last winter quite a number on my grounds lost their heads.

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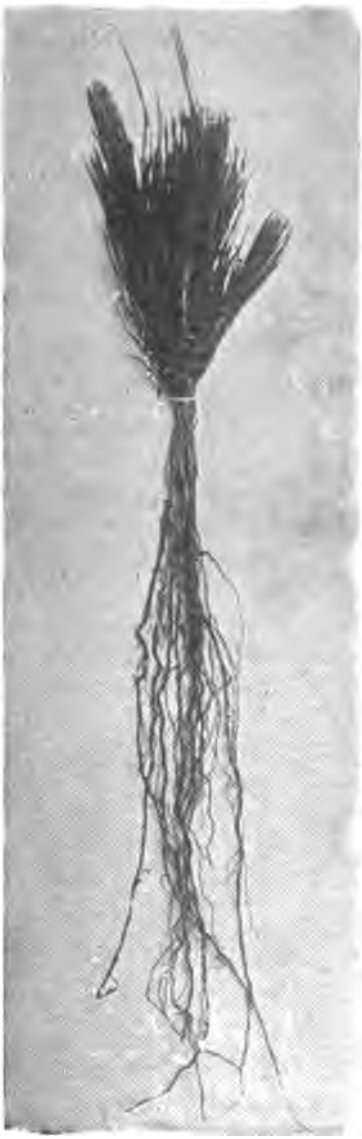
Propagation.—The raising of evergreens has been and will continue to be a great bugaboo. The man who can grow all kinds of conifers from seed successfully is a genius, and I believe he could succeed in raising chickens. The successful way is to imitate nature, as Frank Brown, of Paynesville, is doing, spading up ground in brush lands and planting in leaf mould. Remarkable success follows by this method. Growing bull pine, however, is another proposition, it is an exception to the general rule. For years, with other nurserymen, I tried to raise them under screen and failed. It was too damp. Then the seed is large, the plant strong and robust and don't want any coddling. It is too much like putting a stout boy of sixteen into a baby cradle and trying to put him to sleep on Mother Goose jingles. He would give a wild war-whoop and break for the haymow, where he would sleep like a sawlog.



One year old Ponderosa, or Bull, Pine.

Once in the Black Hills I saw a splendid bed of self-sown seedlings. It was by the railroad tracks. The soil had been scraped off for the grading, leaving the hardpan. Some trees near by furnished the seed. The wind did the sowing. Of course they were sown in the fall. They were covered with the slush and the snow, and came up early in the spring. Now when these plants come up, they begin to go down. The root is sort of a gimlet boring its way to moisture. I then took the hint and sowed in the open in the fall. Then I could raise them as easily as I could peas. After years of trial, however, I discarded fall sowing for early spring. Mice and squirrels find the seed, and I found plants here and there all over

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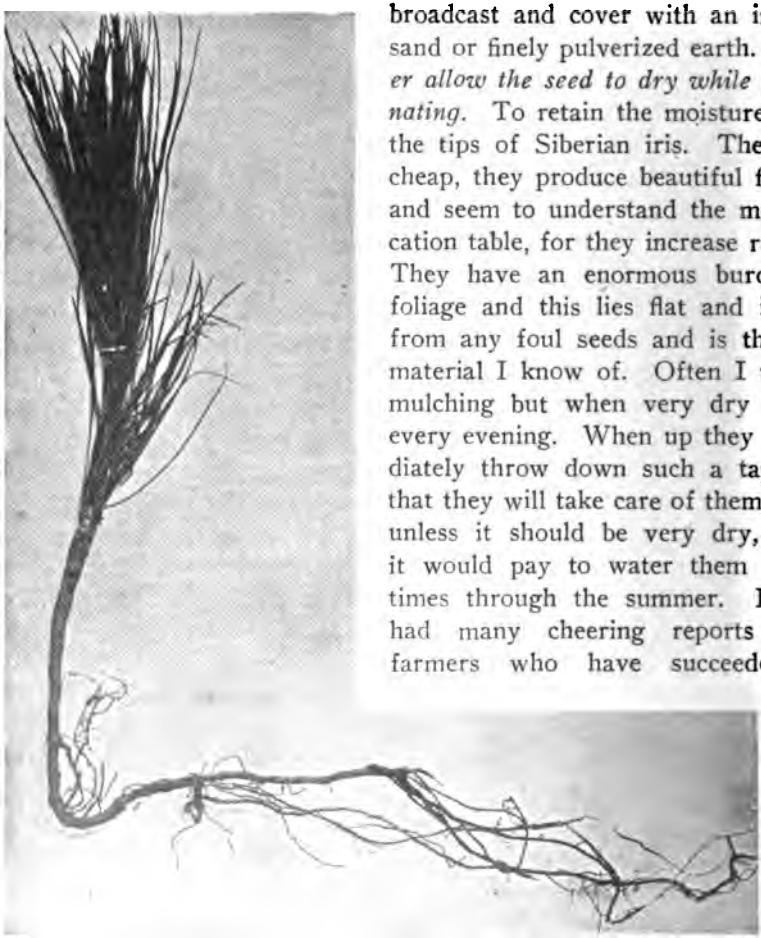
the garden where the little rascals had buried them. In one instance they came up so early a hard freeze caught them and killed many. Now about the middle of April I soak them a day in warm water, changing it once or twice to prevent souring. A pound will sow a bed eight feet square. Spade up the ground, rake it down fine, sow the seed in drills or broadcast and cover with an inch of sand or finely pulverized earth. *Never allow the seed to dry while germinating.* To retain the moisture I use the tips of Siberian iris. These are cheap, they produce beautiful flowers and seem to understand the multiplication table, for they increase rapidly. They have an enormous burden of foliage and this lies flat and is free from any foul seeds and is the best material I know of. Often I use no mulching but when very dry water every evening. When up they immediately throw down such a tap root that they will take care of themselves unless it should be very dry, when it would pay to water them a few times through the summer. I have had many cheering reports from farmers who have succeeded in



Two year old transplanted Bull Pine.

raising them. One man in Manitoba said that from one-half pound of seed he secured 3,000 fine plants. The seed cost him $3.00 per pound, so the cost was 50c per thousand. With trees produced at so small a cost there is no excuse for not planting on a large scale. Do not cover the bed either summer or winter, unless in the far north.

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The trees are hardened to heat and cold. They can be transplanted when a year old. At that age there is the least shock.

Here are the yearlings. See the long roots. I know of no tree that transplants better. For several years we have put them out with Scotch and Austrian pines and save a much larger per cent of them than we do of the others. We have planted in March with the best of results. In taking them up we dig down and drift under and secure the roots full length. Don't cut any off. You see that heavy foliage—all the root is needed to nourish the top. In planting, dig a trench six or eight inches deep, perpendicular on one side. Place your plant against the side, double in the roots and with the other hand haul in the dirt. You can plant two inches apart or four, as you like. When your trench is nearly full press the earth solid with your feet. One great trouble in planting evergreens is you don't get the roots solid. When the row is finished, take your hoe, fill up the trench and leave the surface light and well pulverized.

Four year old Bull Pine.

Here is a tree two years transplanted and three years old. What a splendid growth in both root and top! You can transplant when a year old without much checking of growth. Compare

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these two year old transplanted with those of same age not transplanted. The tops show but little difference.

Here is a four year old transplanted bull pine two feet tall. This has reached the limit. You see the fibrous roots have been eliminated, and the tree is forming tap roots. This should have been transplanted when the size of these two or three year olds; otherwise you let them stand a year longer, and you might as well put them on the brush pile. Fairly established these trees make two feet a year, and their sturdy limbs and long needles make the best of windbreaks. I have endeavored to make the matter so plain that a man who can raise onions can raise these trees. Let him defend his home, his family, his stock, and in a hard winter virtually move his farm 300 miles south.

This is not all.—By one of the tremendous strides of modern invention, science and art come along and wave their wands over the thrifty grove, and it is turned into a flock of sheep, so hardy they need no shelter, but they will shelter you. It costs nothing to winter them. Dogs won't worry them, and you don't have to fence them in. You know where they are nights. The "Technical World" of last June gives an interesting account of a new enterprise by which these long needles are turned into fibre by a chemical process, and the fibre is woven into cloth. Oil in large quantities is also distilled from the foliage, and this is used in the manufacture of soaps and confectionery. So from this marvelous tree you have a rare combination: fuel, lumber, windbreaks, groves, beautiful forests, a flock of sheep and an oil well. The United States government is ransacking the earth for some hardy evergreen for the great northwest. But they may search far and wide before they find such a heroic, hardy, thrifty tree as this, so marvelously adapted to all the various soils and conditions of our great west and north. Planted on the semi-arid plains, they will shut off the hot winds and make dry farming a success. Planted in the western Dakotas they will mitigate the cold, protect home and stock and add largely to the value of the homestead.

Mr. Geo. J. Kellogg, (Wis.): I would like to know why he does not trim those roots instead of doubling them up.

Mr. Harrison: You see these are very heavy tops, and they must have a root system capable of nourishing them.

Mr. Kellogg: Have you ever tried pruning?

Mr. Harrison: I have tried everything. I have been at the business twenty-five years, and the best way that I have ever found is to double in the root.

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Col. C. W. Gurney (S. D.): The question in regard to pruning a tree in transplanting is practically one that ought to solve itself. It is practically impossible to transplant any tree without pruning the roots. The tip of every minute fibre is cut off and that gives the root system. Is that not correct?

Mr. Harrison: Not entirely.

Mr. Clarence Wedge: I have been very much interested in Mr. Harrison's paper. I think it was some fifteen years ago I began to be interested in this matter, having heard so much of the drought resisting power of the ponderosa pine, as mentioned in this paper—I think it was at the time when we were suffering from periodical droughts which were very severe. My general experience rather leads me to believe that we are perhaps a little east of the natural habitats of the ponderosa pine, in the eastern half of Minnesota and, perhaps, in all of Minnesota. In the first place we had the difficulty mentioned by Mr. Harrison. My seed came from Colorado, and I am sure the winters produce serious results with the trees. The foliage would sear and turn red; I do not know that any of the trees were killed outright, but they were seriously damaged. Since then I have been getting trees from the Black Hills which I am sure do much better. However, the ponderosa may perhaps not be as easily transplanted as the ordinary evergreen, and it is of slow growth as a young tree. The Scotch pine, I think, is perhaps equal in growth to the ponderosa pine, and most people like to use that tree for a windbreak.

Mr. Harrison: At what age do you transplant?

Mr. Wedge: In the nursery at two years, and after that at three and four years. I find there is difficulty in transplanting them when large when sent out to our customers. I have no trouble in the nursery, but in sending them out to our trade, our customers, we find they have great difficulty in getting a good stand. I think, however, the ponderosa pine is a grand tree even here. A few days ago I had the pleasure of going to Northfield and through the grounds of Carleton College, where I saw some of the older plantings of different conifers. I was especially interested in seeing the Austrian pine and ponderosa pine standing side by side—trees perhaps thirty feet in height—and I considered that the Austrian pine was perhaps better than the ponderosa, but certainly the older trees of the ponderosa and the Austrian pine, standing side by side, indicate that the ponderosa after it has attained a certain growth in our climate will do very well but as a young tree will not prove so satisfactory.

Mr. Harrison: I just want to say a word about this tree. (Indicating.) This is a four year old tree, so you can see that the ponderosa will make about two feet of growth a year with us. In York county and farther west, they have made a splendid record.

Mr. Wedge: My remarks apply to eastern Minnesota. I believe in Dakota the ponderosa does better than with us.

The President: In my experience they have not made as good a growth in northern Minnesota as some of the others. Where they get more units of heat in their period of growth, I presume they would do better; that would probably make a difference.

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Two Minute Talks.

(Occupying the last half hour of the 1908 annual meeting.)

The President: We have come to the time now when we must close our meeting. I want to say on behalf of the chair that I feel very grateful for the kind way in which you have treated me while I have had charge of this meeting. It has been very nice of you to take the rulings of the chair without excepting to them, and it has helped very much in the way of expediting business. I am now going to ask for two minute speeches, and two minutes will mean two minutes and not five or ten minutes. I am first going to call on Mr. Kellogg, our good friend from Wisconsin, who has been with us so many years.

Mr. Geo. J. Kellogg (Wis.): I have been here before, and you all know me. If you know anything good of me remember, and if you know of anything bad forget it. I have talked more on this occasion than Philips, and that is very unusual. I have enjoyed the meeting. If I had not thought it was going to be a good meeting I would not have come three hundred miles to attend it. It costs me twenty-five dollars every time I come up here, and I have got to get a good time out of it. I have made a great many notes, but I have more in my head. I expect to go home and put into practice some of the things I have learned. I always like this convention because I know who the officers are going to be before they are elected. There is a harmony here that I do not believe you can find in any other organization in the world. This is the biggest society of its kind in the world, and what you are doing, and what Mr. Patten and Prof. Hansen are doing, who are so closely associated with your society, is more than Burbank is doing in California, because he benefits only a small portion of the country, while your work covers the entire Northwest. (Applause.)

The President: Now we want a few words from Mr. Kimball. Mr. Kimball has not been with us for several years past, and we are very glad to see him here again.

Mr. F. W. Kimball: This society offers a thousand dollars for an apple that equals the Duchess in hardiness, the Malinda in keeping and the Wealthy in quality. Why does not our state legislature supplement that with ten or twenty-five thousand dollars? Why does not our society descend upon the legislature and make them do it? If they do not produce the apple the state does not have to pay for it, and if they do produce it, it will be worth a million dollars to the state.

The President: The last legislature gave us $16,000 and in addition to that we have our regular annual appropriation. I am next going to call on Col. Gurney, of Yankton, South Dakota.

Col. C. W. Gurney (S. D.): I wish to say that I am very highly pleased with my visit to this society, and especially so at coming into personal contact with so many of the men I have been acquainted with by their names only as they appeared in the reports—for I have

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been a member of the Minnesota horticultural society for more than twenty years—and I want to assure you that my best wishes and prayers will always be offered in your behalf. I know that it is a grand society; I know that my own society in South Dakota holds you in the highest esteem, and I shall return with that esteem manifoldly increased. We want you to send a delegate to meet with us at Deadwood next month, and as a partial recompense to your people for the many acts of courtesy and kindness I have received here—and which through me have been extended to my state—we trust we may be permitted to reciprocate your courtesy. We hope to have our good friend Long (our reporter) with us at Deadwood, and in that way we may be able to partially recompense you, and as a personal matter I will promise to watch over him and see that he comes back to you safely. (Applause.)

The President: We are very glad indeed to have Col. Gurney with us and trust we shall see him many more times. I am now going to call of Mr. C. L. Richardson, of Wisconsin.

Mr. C. L. Richardson (Wis.): I wish to thank you on behalf of your sister society of the commonwealth of Wisconsin for the kindness and courtesy you have shown her delegate during his presence here. You have strictly followed the biblical injunction, for "he was a stranger, and ye took him in." I cannot help but appreciate the spirit of cordial friendship and hearty co-operation which exists between our societies, and I hope as the years go on this feeling will deepen and strengthen, and that it may not only rest within us, but that it may spread over the entire Northwest. We would like to have as many of you as can attend our meeting, which will be held at Madison on the 13th, 14th and 15th of January. If you will come to Madison we will endeavor to entertain you in the best possible manner so you may have a good and profitable time. I have been surprised at the immense amount of work this society is accomplishing, and I assure you I shall return to my state with a full appreciation of your value and with a full realization of the importance of the useful suggestions I have heard from your members. I thank you. (Applause.)

The President: Wisconsin is a nice place to go; I was down there as a delegate two years ago, and they treated me royally. Now I am going to call on Capt. A. H. Reed, of Glencoe.

Capt. A. H. Reed: I merely wish to say that I enjoyed this meeting very much, and to me it has been very profitable. I think we all enjoyed the way Prof. Green handled us. There have been men in that chair in previous years who used to make me mad, and I am one of those fellows who kick when they get mad, but this time everything went off smoothly, and Prof. Green had his good nature radiating to everybody. (Applause.)

The President: The Captain always has a real good time when he comes to these meetings, although sometimes I have felt that he has been shaking his fist at me. I am now going to ask Mr. R. A. Wright to say a few words.

Mr. R. A. Wright: I joined this society some sixteen years ago and never missed a session since then, and for a number of years I

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have felt as though I enjoyed the last session more than any previous one. I am glad that our work is so harmonious in every way.

The President: Just at this time I am going to call on Rev. C. S. Harrison, of York, Nebraska, who alwavs raises us up.

Rev. C. S. Harrison (Neb.): I love this society, and my wife says I cannot be too sick when it comes time to attend the meetings of this society. I enjoy these meetings very much, and I have especially enjoyed this one this week. These meetings are getting better and better every year, and I don't know what it will be coming to, but if it keeps on getting better it will land you in paradise by and by. (Applause.)

The President: It is delightful to have a man like Mr. Harrison with us, and we hope he will come for many, many years. Now I am going to call on a delegate from a sister state, Mr. G. D. Black, of the Northeastern Iowa Society.

Mr. G. D. Black (Iowa): I cannot find words to express the feeling I have in my heart today. I am glad that I can add my testimony to those of the friends who have spoken before me. I cannot begin to tell you of all the good things I have received while here and which I expect to carry back to Iowa, and I shall not only carry them back, but I shall put into effect some of things I have learned here. Our interests in northeastern Iowa and Minnesota are mutual, and we are working along much the same lines, but I am sorry to say that with few exceptions you have better workers than we have in Iowa. Our workers are few and far between, and I am very sorry that such a thing is true. Our Northeastern Society and the Southern Minnesota Society come together quite frequently, and we have good times, so I feel like a brother. I hope to see you all down our way whenever occasion makes it convenient. (Applause.)

The President: There is only an imaginary line between Minnesota and Iowa, and we are glad that we can be of mutual benefit to each other. I am going to call on Wyman Elliot, who is one of the busy men of this society. He is chairman of the executive board, and you all know how active he is in all the good works of this society.

Mr. Wyman Elliot: It has been a great pleasure to me to be with you through this meeting and to look into your faces and see the interest manifested by you in this great subject of horticulture. The work of this society means a great deal to the future of the state of Minnesota. When we started in the first year there was a very small band, but we have been gradually increasing until at this time we are reaching out in all directions in the state and have even extended our activities into adjoining states. If this interest keeps on growing we shall have to go to the legislature frequently for assistance to print our reports and help spread this gospel of horticulture. I thank you. (Applause.)

The President: I am going to change the order a little now and call on a lady. I am going to call on Mrs. Sawyer, who stands just outside the door.

Mrs. Nellie Sawyer: I am so frightened at this call upon me that I can scarcely tell my own name. I do not think there is anything I can say to you except that I have had a good time.

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The President: I am glad to have Mrs. Sawyer come out to these meetings. I think she has expressed a sentiment we all feel, and that is, that we have had a good time. Now I am going to call on Mrs. Gibbs.

Mrs. F. H. Gibbs: I told Mr. Latham that if I did not attend one of these meetings it would be like passing by an old friend, because I want to hear Mr. Philips and Mr. Harrison and all these other men whom I enjoy hearing. Then I also like to hear Prof. Green call them down. I enjoyed this meeting very much, and I was just on the point of going home when you said you wanted to hear from me. (Applause.) Before I go home I want to hear from Mr. Latham; we scarcely ever hear anything from him.

The President: Very well, this is a good time to hear something from the secretary.

Secretary Latham: I need not say that I have enjoyed this meeting, although most of my time has been spent on the outside, and I did not see and hear as much of the meeting as others did who are in attendance. It is my interest to see that things go along smoothly, and when things drag, or some one who is on the program is not here, I feel as though I were responsible for it, and that makes me a little bit tired. When they undertake to talk three minutes and then talk twenty, I am inclined to think that some one says "the secretary puts too much in the program," and "it is the fault of the secretary." It is not the fault of the secretary, but it is the fault of those long-winded fellows from Wisconsin and elsewhere. (Laughter.)

The President: I suppose you would like to know that Mr. Latham was re-elected secretary, and that it was by unanimous action of the executive board. I am next going to call on Mr. Huston, who has been with us on several previous occasions.

Mr. H. A. Huston (Chicago): I am a member of this society, and the fact that I have made a journey of from six to eight hundred miles should be taken as an indication of my interest in what you are doing. At the same time I belong to quite a number of other horticultural societies, almost enough to constitute me a "walking delegate," as they say in labor unions. So I have the pleasure of coming to you as a representative of the Illinois, Indiana and Michigan horticultural societies to express appreciation of your large membership and of the good and successful work you are doing, and also to convey their hearty good wishes for your future welfare. (Applause.)

The President: I have been at one or two of the meetings of other horticultural societies, and in each case they have been exceedingly cordial and nice to me as a representative of this society, and I have sometimes thought and felt in the case of delegates from other societies that come to visit our own that we were not quite as cordial and pleasant as in the cases of the other societies referred to. It is not our purpose to feel or act that way. We have within us a spirit of the heartiest good will towards our neighbor societies, and in order to express our obligations to the representatives of other societies whose presence we are glad to acknowledge, I want to move that visitors from other societies be made honorary members of this society for the current year.

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The motion was numerously seconded and, being put to a vote, prevailed unanimously.

Mr. C. L. Richardson (Wis.): On behalf of the Wisconsin society I want to thank you for your kindness and courtesy to me, and for this present expression of good will and honor you have conferred upon me, and during the coming year I shall endeavor to live up to the constitution of the Minnesota society and to the best of my ability support the Wealthy apple tree. (Laughter and applause.)

The President: Thank you, Mr. Richardson. I am now going to call on our good friend, Senator Probstfield, of Moorhead, who has been interested in apple culture for thirty-five years.

Mr. R. M. Probstfield: I think I have talked enough during this meeting so I do not need to say any more at this time. I have made mistakes and put in words where I should not have done so. There is one thing that impresses me very much in this society and that is the harmony that exists among the members. It is popular in this society when it has good officers to retain them in their places as long as they will serve, and I hope to see the present officers continued as long as I live. (Applause.)

The President: Well, we are always glad to hear from Senator Probstfeld, and I hope he may be with us for many years to come. Now I am going to call on my friend John Cummings. I want him to stand on his feet and say something. He is a mighty nice man and a good friend of mine.

Mr. John Cummins: I have not got much to say. A man who has worked hard for sixty years has not had much time to do talking. You know I am always here when I can come, and if I didn't enjoy these meetings I would not be here. (Applause.)

The President: I am next going to call on my dear old friend, Seth Kenney.

Mr. Seth Kenney: I have been attending these meetings for nearly thirty years, and I am glad to say that I meet here the cleanest lot of men I ever saw. I hardly ever know any of them to be smoking or chewing, and there are many other things which certainly show that they are above the average of men. I know what I am talking about, for I have been in close contact with fruit men. You will always see me here as long as I live and am able to get here. (Applause.)

The President: Next I am going to call on Mr. Pabody, who has been on the reception committee and attended to the reception of our friends so nicely.

Mr. E. F. Pabody: In olden times there was thought to be a fountain of youth, and people sought all over the world to find it. It was thought if a man drank of this water he would retain or renew his youth, but it was never found. However, I think we have found the fountain of youth in this society, and it is a delight to every one who comes here. Here are men from sixty to seventy years old. There is one man in attendance here who is eighty-nine years old. He is just as active as anybody here. In all the various pursuits of life I know of nothing so health-giving and such a stimulation to long life as to become a member of this society. There are lots of young men

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in this society, too, and it is a source of gratification to me to have it so, and I want to bid all of you, young and old, God-speed during the coming year. (Applause.)

The President: I am going to call on Mrs. Sprague, who is always with us.

Mrs. L. E. P. Sprague: Since the winter of 1881 I have met with the horticultural society, and I find its members the most honest and agreeable people I have ever met, and I want to say that I have enjoyed this meeting the best of any. (Applause.)

The President: Next I am going to call on Mr. Bush, whom we have the pleasure of having with us this year.

Mr. A. K. Bush: I wish the twelve members who organized this society forty years ago could see the results of their work at that time and the spirit of co-operation that has built up this society to its present proportions and usefulness. It is the greatest horticultural society in the United States, the greatest in the world, and I feel proud that I am a member of it. (Applause.)

The President: Now I will call upon Mr. Beebe, of Lake City, who is a comparative newcomer.

Mr. H. U. Beebe: This is only my second meeting with your society, and I enjoyed both meetings very much. It took my thoughts back to New Jersey when I used to go with my father to attend the horticultural meetings there when quite a boy, and I met there all the older men of New Jersey who had had horticultural experience. I think it was that early training that brought me here to your meetings. I find a great deal of enthusiasm here and a great deal to help me in every day work. I shall remember these meetings and profit by them the whole year through. I shall go home and put into effect in my work with the Jewell Nursery Company certain things I heard here, and I hope to tell you at the next meeting how they worked out at Lake City. (Applause.)

The President: I am next going to call on Miss White, the president of the Woman's Auxiliary.

Miss Emma V. White: I always enjoy attending these meetings even if I do not understand all the things that are talked about. When I hear all these things that are discussed in connection with horticulture, I am afraid I would be pretty badly mixed up if I should attempt to discuss them with you. However, I always enjoy these meetings because I always like to associate with people who are thoroughly in earnest and who are interested in their work as the members of this society are. (Applause.)

The President: I am next going to call upon Mr. Bisbee. I don't believe we have ever heard from him before, and this will be a good time to bring him out.

Mr. John Bisbee: I never made a speech in my life, but I can confirm every word of praise that has been spoken by the others who are able to make a speech, and I think I have enjoyed the meetings as much as any of them.

The President: I am going to call on our friend Hughes to talk to us about Washington.

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Mr. John S. Hughes: I know at this time and during this week there are many minds and hearts in the state of Washington who are turning to this city and to this meeting held here today. Often I run across people from Minnesota who speak of their first inclination towards horticulture that was derived from contact with men connected with this society, and the Washington society contains a good many men who were formerly associated with Minnesota horticulture, and one that you probably all remember is Mr. C. L. Smith, who is very closely associated with me in my work. (Applause.)

The President: We all remember Mr. Smith very well. I am now going to call on Mr. C. E. Older.

Mr. C. E. Older: This is my annual week of relaxation. Down at our place they always expect Older to go to Minneapolis the first week in December, and I want to say that I enjoy these meetings more than I can tell, and I always think that the last one I attend is better than the previous one. (Applause.)

The President: I know there are a number of others here upon whom I have not called, but I did not call upon those who have spoken simply because we did not want to hear from others. Now, we should be glad to hear from any one who has a word to say.

Mr. Clarence Wedge: I will not say much, only I want to express something of appreciation of our society to our friend Trafford Jayne, who for several years has added so much to our pleasure and entertainment. I want to move a resolution of appreciation in behalf of the society of Mr. Jayne for the entertainment and pleasure that he has afforded us.

The resolution was unanimously adopted by a rising vote.

The President: I see Mr. Benjamin down there, and I am going to call on him for a short talk.

Mr. J. F. Benjamin: I can hardly find words to express the enjoyment and the information I have received while I have been attending this meeting, and I shall go home and put into practice many of the things I have learned here, and I hope it will be the means of making my home more enjoyable and more profitable to myself and my family than it has ever been before. I am glad to meet these old friends here from year to year and also to greet the new members as they come into the society. (Applause.)

The President: Now, I am going to call on Mr. Drum. Mr. Drum is one of our faithful old members, and we hope we shall see him here for many years.

Mr. S. H. Drum: I have heard it said of a certain man that he always had a crick in his back and could not pick up anything. I am almost in the same condition only it is my head instead of my back, and I cannot find words to express myself. (Applause.)

The President: Now there are lots of others here that we would like to hear from. I was going to call on Philips but I think that I am going to drop him this time. I see Mr. Nutter over there, the landscape architect, and I am going to ask him for a few words. I think he has absorbed a good deal of wisdom at these meetings since

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he has been attending, and now we will see if he can give out a little.

Mr. F. H. Nutter: It has been twenty-five years since I first came to these meetings, and I have been able to absorb a little knowledge. I may say that my work lies mainly along the line of the ornamental, but at the same time I find that almost every one who participates in these meetings is interested in the ornamental side of horticulture as well as in the practical side so, and in that way we work together.

The President: I do not want this meeting to go along like some prayer meetings where they wait for one another to take part or like a Quaker meeting where they sit still until the spirit moves. Now we have a few minutes more, and I want quite a few more to speak during those few minutes whether they are called on or not. Here is Mr. Jayne, we know he can sing, but we want to hear him make a speech.

Mr. Trafford Jayne: Mr. President, I thank you very much for the resolution of appreciation you have just passed in my behalf. I regret very much that I have not been able to attend the meetings this year, because from what I got last year I intended to be here more during the present meeting, but on account of business I was unable to do so. The president says this is the first time he heard me make a speech. I think he has forgotten that upon the last occasion of my meeting with you he called on me for a speech, and I responded. I was rather in the condition of the little girl about whom I read in the Journal the other evening. A little girl got up one morning and felt in rather a bad humor and her mother found it necessary to take her into the bedroom and administer a physical rebuke. As was natural, her little brother, Eddie, rather enjoyed seeing his sister getting into trouble, and he could not resist the temptation of going to the bedroom and looking in through the door. The mother had the little girl across her knee, when she squirmed her head towards the door and in an injured tone said to her brother, "Eddie, I wish you would go away! Can't you see that mamma and I are busy?" (Laughter and Applause.)

Mr. John S. Hughes: A good many years ago Mr. Jayne and I were on a speaking tour together, and of course we had our particular stories to tell at those meetings. At one place Mr. Jayne happened to precede me, and when I arrived I began speaking and incidentally told the audience what I thought was a very funny story, but it seemed to fall perfectly flat. There was no response; I could not even draw a smile from them. After the meeting was over, and Mr. Jayne and I went away together, I said to him, "I wonder what was the matter with that audience; I could not get a smile out of them when I told that story." Mr. Jayne replied, "Why, I told that story just before you got there." (Laughter.)

Mr. A. G. Long: "And that reminds me." A colored man went into a country store and said to the proprietor, "Say, boss, do you sell any gunpowdah heah?"

"Yes, sir," replied the man, "I sell gunpowder."

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"Will you lemme see some o' dat gunpowdah?" asked the darkey.

"Certainly," said the proprietor, and brought out some powder.

"Poah a lil' o' dat gunpowdah in mah han'," said the colored man.

The storekeeper obligingly did so, and the darkey held it up to his nose and critically smelled of it.

"An' do you call dat gunpowdah?" he inquired.

"Yes," said the man, who grew a little wrathy, "What's the matter with it?"

"Why," the darkey replied, "peahs to me lak dat gunpowdah smell as if it ben shot off befoah!" (Laughter.)

The President: Now then we have a few minutes more, and I am going to call on Mr. Philips to close these two minute speeches, but I am going to give him a little more than two minutes.

Mr. A. J. Philips: My wife always tells me, and I want to give the rest of you this advice, "If you want to make a good speech, you want to stand in with Long; he will fix up your speech so it is worth reading." I am really surprised sometimes when I look over the reports of this society to see how much better my speeches look in the report than they really were when I made them. There is a great advantage in that, because if you have a good man to fix them up for you, you don't need to be so careful what you say. Everybody has told of the good times they have had here; that has got to be a regular custom. This society you have here is a wonderful organization. It is organized on a big scale, but you made a little mistake this year. They left it to Latham to prepare the grist for the mill—and he prepares it in good shape. He puts in as good grain as you can find in the state, it is all "number one hard," and then he brings it here and turns it over to Green to grind it out, and he cannot possibly do it without wasting a good deal of material. I was a little sorry that my old friend Brown, from Baraboo, was not given a chance to answer questions. He is one of the best students of apples there is in the state. He cannot enjoy these meetings like we do because he cannot hear well, but you ought to see his home and see what he has done in this line of work.

I think this society, as strong and influential as it is, ought to go on record about this time in reference to an apple sent out from this part of the United States. I just want to tell you one little incident that came under my observation some three years ago. A lady came to my house and wanted me to go to her home and tell her about setting out apple trees. I was away at the time, but when I got home my wife told me, and I went to see this lady. She told me she had seen an advertisement in the paper of a certain firm in St. Paul that sold nursery stock. They advertised in the paper that they were sending out a new kind of apple tree for a dollar apiece, and as she thought they must be quite large trees she ordered two trees and instructed them sent by freight. She said she thought they would be big enough so they would probably bear in a year or two, but when the trees came they came in a letter by mail. (Laughter.) I went out and looked at them, and I want to tell

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you now that one of them died that same summer and the other one last summer. I am approached every few days by my neighbors and others regarding the same apple. I tell them always that it has never been exhibited at the Minnesota State Fair and has never been exhibited by the Minnesota Horticultural Society; in fact there is no such apple, and I think this society ought to publish something that would put people on their guard against buying that apple tree.

If I did not enjoy these meetings I would not attend them. The first one I ever attended was held in Winona, and I enjoyed that one and have enjoyed every one since. I never was asked to take a drink by any member of this society, and I was never asked to sing a song but once, and that was by Professor Green, and then his wife said he was making fun of me. I never knew much about prayer, and perhaps my prayers would amount to as much as the little girl thought hers did. At a certain house a little boy baby came into the home, and that evening the little girl, Nellie, went to bed without saying her prayers. The nurse said to her, "Why, Nellie, aren't you going to say your prayers?" Nellie replied, "No, I am not." The nurse asked her why she was not going to say her prayers. Nellie replied, "Well, here I have been praying for two years for a little sister, and Johnny just began praying for a little brother last evening, and he got him before morning." (Laughter.) I don't want to take up any more time, we have had a good time here, the people have enjoyed themselves, but we have sometime got to give up all these good things that come to us in this world. Now I am just going to thank you for the good time I have had and hope that next year we may all be back here again and have even a better time. (Applause.)

Are You Competing for the Apple Seedling Prizes?—There are two or three hundred competitors listed for these valuable prizes of $100.00 a year, amounting in all to $700.00. Some of these have already dropped out through lack of success in growing or protecting seedling trees. It is not by any means too late, nor will it be for two or three years yet, to enter into this contest, and there are hundreds in the society who are not yet growing seedling apple trees for this purpose that might do so. Seeds saved from good specimens of the Wealthy, Patten's Greening, Northwestern Greening or other good keeping varieties, are almost certain to bring something of value to the grower. One of the keenest of pleasures is to watch the development of some new growth like a seedling apple tree and anticipate the character of probable results. If you don't win the $100.00 you will at least have the joy and satisfaction that comes with the effort.

Stable Manure when employed in garden making should be added in the fall and winter and not in the spring. This allows thorough decay, and the residue is better incorporated in the soil. The earth, too, compacts better, capilliarity is improved and better heart is secured. These things mean much in handling the garden with ease and satisfaction.

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PROGRAM 43rd ANNUAL MEETING

Minnesota State Horticultural Society, Held in Minneapolis, Minn.

December 7, 8, 9, 10, 1909.

Place of Meeting.

The annual meeting is to occupy the same accommodations in the First Unitarian Church, corner Eighth St. and Mary Place, that have been used now so acceptably for a number of years, the society meeting in the audience room, the fruit exhibit being displayed in the large basement room immediately beneath, with a roomy cloak room situated immediately between the two.

Fruit Exhibit.

A splendid fruit exhibit is assured, and we believe about the usual proportion of the display will be seedling apples. Competition in seedling apples is open as heretofore to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. Every member should be sure to bring something as a contribution to this fruit display, which will surely exceed one thousand plates, that being the approximate amount of display for the last two or three years. See list of premiums on last pages of this program, noting especially those for "pecks of apples" and "bushel boxes of apples."

Program.

Look at the program, and you will have some idea of what is in store for you. None we have ever issued has contained a greater diversity of topics, interspersed with unusual features of special interest.

QUESTION AND ANSWER EXERCISES.

To give opportunity for free discussion of topics of general interest to the members, a half-hour has been set aside just preceding the opening of all the sessions of this meeting except the first. These exercises are led by experts in the various topics considered and give opportunity for the securing of any information desired. It is suggested that members might send questions beforehand to the secretary—and this would be a splendid advantage to those who do not attend the meetings, as these exercises will be reported and appear later in our monthly. A question box will be provided at the meeting that can be used for a similar purpose or questions can be asked orally of the leader during the exercise. Come early and get the full benefit!

Extend Invitation.

Don't forget to invite your friends to this meeting. Neither forget the wife, who will enjoy an outing and meeting of this kind as well or better than you—nor the son or daughter, who is to follow you in this cherished work.

HOTEL MAJESTIC IS SOCIETY HEADQUARTERS.

This concrete, three-story hotel—the pleasant gathering place of our members last year—is situated on the corner of Hennepin Ave. and Seventh St., with entrance on Seventh St. side, and only two blocks from our place of meeting. There is a cafe in the building and plenty of other restaurants close by on Hennepin Ave. Rates of $1.00 per day per room, one in a room, or $1.50 for two in a room, have been secured. Room with bath $1.50, two in a room $2.50. Every room is provided with hot and cold water, telephone, etc.

A double room is provided on the second floor as headquarters of the society, to be used by the members for social purposes. It would be well for members to address the hotel directly and make reservation of rooms as long a time beforehand as possible, to make sure of accommodations—always stating when you will arrive and depart.

Minnesota State Bee-Keepers' Society

Will hold its fourth annual meeting in a room adjoining that occupied by the Horticultural Society on Wednesday afternoon and Thursday, Dec. 8 and 9, 1909.

INSTRUCTIONS IN GRAFTING AND CROSS-POLLINATION.

Each day of the meeting, from 1:00 to 2:00 o'clock P. M., the art of grafting will be taught to any applicant, using actual scions, roots, raffia, wax, etc., and the applicant will be shown how to make and complete a graft—which he may take away with him. Models will be used to illustrate cross-pollination and actual flowers used as far as possible. W. D. Valleau and F. J. Crider, two assistants in the horticultural department of the State Agricultural College, will conduct these exercises in the Fruit Room. Look for the large sign, "GRAFTING."

For further information address the officers of the society. See last page of this program. Appointment of committees on credentials,

NOTICE:—A bell will be rung in the Fruit Room five minutes before the exercises begin in the Audience Room.

A TEN MINUTE LIMIT ON ALL PAPERS.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to ten minutes, or 1,000 words, except as noted.

Discussions are open to all, whether members or not. Take hold!

TUESDAY MORNING SESSION.

9:30 o'clock.

Every member attending should not fail to be in his seat promptly when this session opens.
Organ Solo, ending at 9:30 o'clock.....
Invocation.....Rev. C. S. Harrison, York, Neb.
Song.....Mr. Trafford N. Jayne, Minneapolis
President's Annual Greeting.....
.....Prof. Sam'l B. Green, St. Anthony Park

Program.

1. Strawberries for All.
   N. E. Chapman, Institute Worker, Owatonna.
2. The Lessons of Twenty-five Years in the Raspberry Field.
   W. H. Hanchett, Fruit Grower, Sparta, Wis.
3. What Can Be Done With 1,000 Evergreens?
   A. K. Bush, Minneapolis.
4. Nut Culture in Minnesota.
   Henry Husser, Minneiska.
5. My Garden.
   A. J. Philips, West Salem, Wis.

Appointment of committees on credentials and award of premiums.

N. B.—Speak of the Grafting and Cross-Pollination Demonstration.

Announce exercise at 1:30 P. M.

This session will close promptly at 11:30 o'clock.

All annual memberships expire on the first day of the annual meeting. Renew and become a member by paying the Secretary $1.00.

TUESDAY AFTERNOON SESSION.

"The Plant Breeder's Problems," a "Question and Answer Exercise," led by Prof. N. E. Hansen, of Brookings, S. D., who needs no introduction as a leader in this work in this country.

2:00 o'clock.

President Green in the Chair.

Reception of Delegates.

Program.

1. What I Found in Russia in 1908.
   A half-hour address.
   N. E. Hansen, Prof. of Horticulture S. D. State Agri. College, Brookings, S. D.
2. Fruit and the Children in the Industrial Contests.
   A. D. Wilson, Supt. Farmers' Institutes, St. Anthony Park.

2:45 o'clock.

Plant Breeders' Auxiliary.
(Wear the Button.)

J. M. Underwood, President, in the Chair.

1. The Plant Breeders' Auxiliary in 1909.
   Clarence Wedge, Secy., Albert Lea.
2. The State Fruit-Breeding Farm for 1909.
   Chas. Haralson, Supt., Excelsior.
3. Report of Committee on Examination of the Minnesota State Fruit-Breeding Farm.
   F. H. Boardman, Minneapolis, E. F. Pabody, Excelsior, Committee.
4. Pollination of Orchard Fruits.
   Le Roy Cady, Asst. Prof. Horticulture, St. Anthony Park.
5. Development of Fruit in the Upper Mississippi Valley.
   Chas. G. Patten, Nurseryman and Originator of New Fruits, Charles City, Ia.

Announce Question Exercise at 9:00 o'clock Wednesday morning.

4:15 o'clock.

A Lantern Address.

Hon. W. M. Hays, Asst. Secy. U. S. Dept. of Agriculture, will deliver a general address on "Breeding," making use of lantern slides to illustrate the subject.

Are you a member of the Plant Breeders' Auxiliary? If you are growing seedlings and are a member of the Horticultural Society you should join at once. No expense. Consult the secretary.

WEDNESDAY FORENOON SESSION.

9:00 o'clock.

"Insects and Fungous Diseases"—a "Question and Answer Exercise," led by Prof. F. L. Washburn, State Entomologist, St. Anthony Park.

9:30 o'clock.

President Green in the Chair.

1. Organization and Working of a Fruit Growers' Association.
   G. G. Sargent, Secy., Excelsior Fruit Growers' Association. Excelsior.
2. Commercial Apples and Getting Them to Market.
   D. W. Longfellow, Commission Merchant, Minneapolis.
3. Five Acres Enough.
   Peter Peterson, Gardener, Atwater.
4. An Amateur in the Strawberry Patch.
   Dr. O. M. Huestis, Minneapolis.
5. Western Horticultural Methods Applied to Minnesota.
   Prof. C. B. Waldron, Prof. of Horticulture, Agricultural College, N. D.

11:00 o'clock.

(There will be a display of cut flowers by the florists in the Audience Room during the two sessions of this day. See premium list.)

Minnesota State Florist Society.

Theo. Wirth, President, in the Chair.

1. House Plants and How to Treat Them.
   C. J. Smith, Manager Lakewood Cemetery Greenhouses, Minneapolis.
2. Herbaceous Plants for Minnesota.
   E. Meyer, Supt. Nursery, Minneapolis Parks.
3. Spring Flowering Bulbs for Minnesota.
   A. S. Swanson, Florist, St. Paul.

You can become a life member of the State Horticultural Society by payment of $10.00, in two annual payments of $5.00 each if you prefer. This will entitle you to a file of our bound reports, a library in itself.

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

"The Bee in Horticulture," a half-hour "Question and Answer Exercise," led by Hamlin V. Poore, State Inspector of Apiaries, Bird Island.

2:00 o'clock.

President Green in the Chair.

1. The Structure and Composition of the Potato, F. E. Older, State Agricultural College.
2. The Apple and Its Parts, A. R. Kohler, Asst. Prof. Horticulture, St. Anthony Park.
3. History of the Okabena Apple.
   H. J. Ludlow, Originator, Worthington.
4. Seedling Apples on Exhibition.
   Wyman Elliot, Chairman Awarding Committee, Minneapolis

3:00 o'clock.

Woman's Auxiliary.

Miss Emma V. White, President, in the Chair.

1. Horticulture and the Farm Home
   Mrs. Wm. Robertson, Instructor, Crookston Agricultural School.
2. School Gardens, Prof. D. Lange, St. Paul.
3. The Fifth Year in Civic Improvement Work at Lake City.
   Mrs. Anna B. Underwood, Lake City.
4. A State Fair School of Domestic Science. A thirty minute address.
   Mrs. Howard Murray Jones, Minneapolis, Leader of Domestic Science School in Illinois State Fair.

4:15 o'clock.

Illustrated talk on "Our Minnesota Birds," by Roy Chapman, Minn. State University.

Are you taking part in the apple seedling contest? See page 16.

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THURSDAY FORENOON SESSION.

9:00 o'clock.

"Operating a Trial Station" is the subject of this "Question and Answer Period," to be led by Prof. S. B. Green.

In a sense every member operates a trial station, and this exercise will be of large practical value to all. Come!

ANNUAL REPORTS.

9:30 o'clock.

President Green in the Chair.

This is not to be a dry session, as the reports will be short, oral and pithily discussed.

Report of Executive Board, Wyman Elliot.
Report of Secretary, A. W. Latham.
Report of Treasurer, Geo. W. Strand.

The **annual reports here following** will be filed for publication without reading, but each officer will be allotted two minutes when presenting his report in which to make oral statement as to features of special interest in connection with the substance of his report.

Reports of Vice-Presidents.

First Cong. Dist., J. A. Howard, Hammond; Second, G. D. McKisson, Fairmont; Third, C. E. Swanson, Cannon Falls; Fourth, F. H. Gibbs, St. Anthony Park; Fifth, E. B. Miller, Minneapolis; Sixth, Frank Brown, Paynesville; Seventh, S. J. Walgren, Willmar; Eighth, H. G. Groat, Anoka; Ninth, R. M. Probstfield, Moorhead.

Reports of Superintendents of Trial Stations.

Prof. S. B. Green, State Experiment Station; Thos. E. Cashman, Owatonna; Dewain Cook, Windom; A. B. Lyman, Excelsior; F. I. Harris, La Crescent; L. R. Moyer, Montevideo; Mrs. Jennie Stager, Sauk Rapids; F. J. Cowles, West Concord; F. B. McLeran, Wrenshall; A. H. Reed, Glencoe; Rev. John B. Katzner, Collegeville; Seth H. Kenney, Waterville; Frank Brown, Paynesville.

Reports of Auxiliary Societies, viz.:

Minnesota State Bee-Keepers' Society, Minnesota Rose Society, Woman's Auxiliary, Southern Minnesota Horticultural Society, North Dakota Horticultural Society, Kandiyohi County Horticultural Society, Red River Valley Horticultural Society, Minnesota State Forestry Association, McLeod County Horticultural Society, Rock County Horticultural Society, Northeastern Minnesota Horticultural Society.

1. Report of Committee on Fruit List.
   J. P. Andrews, G. W. Strand, T. E. Cashman.
2. Adoption of Fruit List.

THURSDAY AFTERNOON SESSION.

1:30 o'clock.

Do you want to ask anything about raspberries, strawberries, currants, gooseberries, etc.?

A "Question and Answer Exercise" on **"The Fruit Garden,"** led by R. A. Schutz, Lecturer on Horticulture in the Minnesota Farmers' Institutes now for four years, LeRoy.

2:00 o'clock.

President Green in the Chair.

Introducing

Minnesota State Rose Society.

Mrs. D. W. C. Ruff, President, in the Chair.

1. Influence of Floral Adornment on Home Life.
   Prof. A. E. Haynes, State University, Minneapolis.
2. The Value of Flower Exhibitions.
   A. S. Swanson, Florist, St. Paul.
3. A Woman and Her Roses.
   Mrs. H. B. Tillotson, Minneapolis.
4. The Culture of Pansies.
   Chas. Rixon, Gardener, St. Louis Park.
5. Development of Natural Resources for Park Purposes.
   Chas. H. Ramsdell, Landscape Architect, Minneapolis.

3:00 o'clock.

Annual Election of Officers.

To be enlivened by distribution of premium apples to those in the audience who will save the seed for the growing of apple seedlings for the prize contest.

3:45 o'clock.

Minnesota State Forestry Association.

Vice-President Prof. T. L. Haecker in the Chair.

1. Superior National Forest.
   Dr. Scott Leavitt, Forest Supervisor, Ely.
2. Preliminary Work in a Mexican National Forest.
   H. G. Weber, Student, Minnesota Forestry School, St. Anthony Park.
3. With the Forest Service in Montana.
   Dean Martin, Student Minnesota Forestry School, St. Anthony Park.

(Program for remainder of this session on next page.)

THURSDAY AFTERNOON SESSION—

Continued.

4. Tree Planting on the Prairie.
   A. W. Krueger, Groton, S. D., Delegate S. D. Hort. Society.
5. Itasca Park and the Minnesota Forest School—A "Question and Answer Exercise."
   Led by E. G. Cheyney, Asst. Professor of Forestry, State University.
6. Election of Officers.

To be followed for a half-hour, 'till 5:45, by a selection of Minnesota forest views, to be presented with accompanying descriptive remarks by Prof. Sam'l B. Green.

At 6:00 o'clock we go in a body to the banqueting hall to dine together in the usual way.

FRIDAY FORENOON SESSION.

9:00 o'clock.

A thirty minute **"Question and Answer Exercise,"** on **"The Minnesota Nursery,"** by E. A. Smith, Vice President of Jewell Nursery Co. Is there anything you would like to know on this subject?

9:30 o'clock.

President Green in the Chair.

1. Tomatoes in the Home Garden.
   Frank W. Powers, Minneapolis.
2. Growing Rhubarb in Winter and Summer.
   Ludwig Mosbaek, Gardener, Partridge.
3. An Experience with Frozen Apples.
   Robt. Wedge, Albert Lea.
4. An Orchard Experience at St. Cloud.
   Math. Tschida, St. Cloud.

Nursery Topics.

1. Planting the Fruit Tree.
   J. P. Andrews, Nurseryman, Faribault.
2. Value of the Grape to the Minnesota Planter.
   Clarence Wedge, Nurseryman, Albert Lea.
3. The Iris—the National Flower of France.—Its Culture and Uses in Nursery and Home Grounds.
   C. S. Harrison, Nurseryman, York, Neb.
4. Propagation by Greenwood Cuttings.
   Max Pfaender, Nurseryman, New Ulm.
5. The Apple as a Street and Lawn Tree.
   F. J. Cowles, Nurseryman, West Concord.

Are there any good seedling apples, etc., in your neighborhood? Get them and the owner of the trees to the annual meeting. Do your neighbors a favor by urging them to attend.

FRIDAY AFTERNOON SESSION.

1:30 o'clock.

The "Question Half-hour,"—A practical topic led by a practical man. **"The Commercial Orchard,"** by J. A. Howard, of Hammond, one of the most successful orchardists in the state.

2:00 o'clock.

President Green in the Chair.

1. Orchard Work in the Bayfield Peninsula.
   Harvey Nourse, Delegate Wisconsin State Horticultural Society, Bayfield, Wis.
2. Spraying a Necessity.
   O. W. Moore, Spring Valley.
3. The Lime-Sulphur Spray.
   A. Brackett, Institute Worker, Excelsior.
4. The Problem of the Commercial Orchard.
   P. H. Foote, St. Paul Park.
5. Best Varieties for the Minnesota Commercial Orchard.
   Wm. A. Buggs, Supt. Schools, Winona.
6. My Top-Working Experience.
   W. J. Tingley, Fruit Grower, Forest Lake. Illustrated with top-worked fruit.

3:30 o'clock.

Closing exercises.
Two-minute speeches by members.
Closing song by Trafford N. Jayne, Minneapolis.

4:00 o'clock.

Closing remarks by the President.
Adjournment.

CH'NKING.

The following subjects will be called up at any point in the program where opportunity offers. Experience shows that there will be such openings, when we may expect to hear from these friends. But to be sure of getting this you must be on hand both early and late.

1. A Horticultural Ramble.
   W. M. Strader, "The Jungle," Mankato.
2. Effects of Deep Snow on Trees.
   Alfred Terry, Slayton.
3. Growing the Native Plum.
   W. A. W. Svendsgaard, Erhard.
4. A Theory about Pear Growing.
   Rev. Jno. B. Katzner, Collegeville.
5. Horticulture at the State Fair.
   C. C. Hunter, Minneapolis.
6. A Profitable Raspberry Plantation.
   H. G. Huntington, Hopkins.
7. Some Apples We Might, Could or Should Grow.
   Seth H. Kenney, Waterville.
8. Origination of Plums and Plum Hybrids by Cross-Pollination and Otherwise.
   H. Knudson, Originator of Compass Cherry, Springfield.

PREMIUM LIST, ANNUAL MEETING, 1909.

All entries must be made with the Secretary at least one week before the date of the annual meeting, and blanks may be secured of the Secretary for this purpose.

All exhibits must be in place by 11 o'clock A. M. of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

Roses.

To be in place **not later than 9:00 o'clock** Wednesday forenoon or no premium will be awarded. Exhibit may be moved after close of Wednesday afternoon session.

Vase of not less than twelve blooms of each variety shown.

	First Prem.	Second Prem.	Third Prem.
Richmond	$2.50	$1.50	$1.00
American Beauty	2.50	1.50	1.00
Killarney	2.50	1.50	1.00
Bride	2.50	1.50	1.00
Bridesmaid	2.50	1.50	1.00

Grapes.

Each variety shown	.75	.50	.25	...

APPLES (not including crabs).

Each variety included in the 1909 fruit list of the society, or in the 1909 premium list of the Minnesota State Fair	.50	.40	.30	...

Collection, not to exceed ten varieties...$20.00, to be divided pro rata.

Pecks of Apples.

Peck of any variety of apples, the fruit exhibited to be at the disposal of the meeting. An exhibitor may enter a peck each of as many different kinds as he pleases. $30.00, to be divided pro rata.

Top-Worked Apples.

Collection of named varieties grown on scions top-grafted on other trees. Accompanying the name of each variety, shown on the same label (to be furnished by the management), must be noted the name of the variety on which it is top-worked. $25.00, to be divided pro rata.

Competition in "top-worked apples" is open to same territory as for seedling apples.

PREMIUM LIST—Continued.

SEEDLING APPLES.

Five specimens (not less than 2¼ inches in diameter) must be furnished of each variety exhibited.

Entries of seedling apples can be made only by owner of the original tree or his sole authorized agent. Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Before payment of premiums awarded on seedling apples, a history and description of the tree and its fruit may be required.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage.
Premium $40.00, to be divided pro rata.

LATE WINTER SEEDLING—Same conditions as for early winter seedlings except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter.
Premium $60.00, to be divided pro rata.

In each of the above two classes the varieties receiving the three highest awards will be designated as having received the first, second and third premium respectively.

BUSHEL BOXES OF APPLES.

Only one variety can be shown in a box. Bushel boxes of the standard size must be used. Awards will be based on the quality of the fruit, packing, etc.

BUSHEL BOX of Wealthy apples.
$25.00, to be divided pro rata.

BUSHEL BOX of any other variety of apples, including seedlings.
$25.00, to be divided pro rata.

NUTS.

Each variety of edible nuts, 1 quart	.50	.40	.30	.20

SECRETARY'S CORNER

COMING TO THE ANNUAL MEETING?—Of course you will lay your plans to attend a part or the whole of this great gathering. Study the program and bring it with you, and fetch along also a friend or two.

DELEGATE TO IOWA HORTICULTURAL MEETING.—Mr. John Hawkins, of Minneapolis, is to represent this society at the annual meeting of the Iowa State Horticultural Society, which unfortunately convenes at the same time as our own meeting, Dec. 7-9. Our meeting holds one day longer, so we may hope to have Mr. Hawkins with us the last day of our own session.

NATIONAL HORTICULTURAL CONGRESS.—This gathering, which is largely in the nature of a fruit exposition, was held in Council Bluffs, Ia., Nov. 15-20. Mr. A. R. Kohler, assistant professor of horticulture at our State Experiment Station, represented the Horticultural Society at that gathering, and a report may be expected from him at our annual meeting, though this is not down on the program.

SUPPLEMENT TO THE SEPTEMBER NUMBER.—A supplement was sent out with the September number to all the members of the society asking for certain information in regard to orchard fruits, etc. Many replies have been received but not from all from whom it is desirable to secure the information asked for. Dear member, will you not please give this matter immediate attention, fill out and send to this office promptly this supplement? This is especially desired from all who have orchards either lately planted or in bearing.

"POPULAR FRUIT GROWING".—This, as our readers will recall, is the title of the revised and enlarged work on fruit growing which is the legitimate successor of "Amateur Fruit Growing", a volume that has had a large circulation throughout the country and especially in the northwest. A second edition of "Popular Fruit Growing" is now from the press and is in every respect a handsome volume, being printed on heavy calendered paper, handsomely bound and with some changes in the makeup of the contents that add greatly to its appearance. This edition is a decided improvement in looks to the first one issued. Price $1., or given for two new memberhips in the society. If you have "Amateur Fruit Growing," you will appreciate the value of this new book as a more complete study of the subject. We all know the author, Prof. Samuel B. Green.

MR. J. M. UNDERWOOD FOR PRESIDENT OF THE STATE AGRICULTURAL SOCIETY.—We note in the columns of the various agricultural papers of the state a suggestion that Mr. J. M. Underwood, president of the Jewell Nursery Company, of Lake City, be elected president of the State Fair to succeed Mr. B. F. Nelson, who, we understand, declines renomination. We know of no one better fitted by experience, training and natural executive capaeity to fill this important position with honor to himself and credit to the interests involved than Mr. Underwood, and hope his election may be accomplished with unanimity, as it should be. When such men as he are willing to sacrifice their personal interests to promotion of the public good, the public should eagerly seize the opportunity to make use of their services. It is suggested that members of the society who are interested to maintain the present high standard of management of the State Fair can be of practical use in this direction by getting in touch with the county agricultural societies that are yet to elect delegates to the State Agricultural Society. These delegates are the ones who will do the voting for the election of officers of the State Agricultural Society at the annual meeting, which will be held somewhere about the middle of January.

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ANNUAL MEETING

Minnesota State Horticultural Society,

DECEMBER 1-4, 1908.

TUESDAY MORNING SESSION.

The forty-second annual meeting of the Minnesota State Horticultural Society convened in the auditorium of the First Unitarian church, in Minneapolis, at 9:30 o'clock on the morning of December the first, 1908, and was called to order by the president, Prof. Samuel B. Green.

The President: We will open our meeting this morning with an invocation, as has been our custom heretofore; we have with us the Rev. C. S. Harrison, of York, Neb., and I will ask him to offer the invocation.

The invocation was offered by Rev. C. S. Harrison, which was followed by a song by Trafford N. Jayne, of Minneapolis.

The President: The first paper on our program is on the subject of the bull pine, by Rev. C. S. Harrison, who has had a long experience and is prepared to speak on the subject in an intelligent manner.

"The Bull Pine and Its By-Products" was the subject of the paper read by Rev. C. S. Harrison, of York, Neb. (See index.)

Discussion:

The President: The next subject on our program deals with small fruit culture in the pine regions of Minnesota. The paper will be read by Mr. A. B. Coleman.

Mr. A. B. Coleman, of Bennettville, then read a paper on "Small Fruit Culture in the Pine Regions of Minnesota." (See index.)

Discussion:

The President: We will now pass on to the next paper, which is right along this line, and Mr. Gust Johnson, of Excelsior, is going to tell us how to successfully grow blackberries in Minnesota.

Mr. Gust Johnson, of Excelsior, then read a paper on the topic "How to Grow Blackberries with Success in Minnesota." (See index.)

Discussion:

The President: We will now pass to the Homer cherry. I know in the southeastern part of Minnesota the Homer cherry has done very well. Its record has been good, and Mr. Walter Yahnke, of Winona, will tell us about the record of that cherry in southeastern Minnesota. He has had considerable experience, and I expect we shall have something very interesting.

"The Homer Cherry Record in Southeast Minnesota" was then dealt with by Mr. Walter A. Yahnke, of Winona. (See index.)

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Discussion:

The President: I am going to call now for a paper by Mr. Gibbs, who is going to tell us how he uses glass in connection with vegetable gardening.

Mr. F. H. Gibbs, St. Anthony Park, then read a paper on the subject of "Glass as an Adjunct to Vegetable Gardening." (See index.)

Discussion:

The President: I am now going to call on Mr. Vincent Bailey. Mr. Bailey is going to tell us about the unusual in garden vegetables and their uses. Mr. Bailey is a very successful gardener; he started in with nothing and now has a nice wife and family and is very successful from a practical standpoint. However, what he is going to give you today is probably more theoretical than practical.

"The Unusual in Garden Vegetables and Their Uses" by J. Vincent Bailey, Newport. (See index.)

Discussion:

The President: We have three minutes left, and I am going to call on Mr. Philips. I know we can sandwich him in anywhere. There are lots of students here this morning to whom I know he would like to talk, and when his three minutes are up I am going to call him down. I know it is pretty rough on him, but I shall be obliged to do it.

Mr. Philips then gave a brief informal talk. (See index.)

The chair appointed the following committee on credentials: L. R. Moyer, Montevideo; R. A. Wright, Excelsior; and G. A. Anderson, Renville.

On motion of Mr. Lyman the meeting adjourned.

TUESDAY AFTERNOON SESSION.

A preliminary meeting of the society was called to order at 1:30 o'clock, at which was considered the general subject of "Evergreens," conducted by Clarence Wedge, of Albert Lea. (See index.)

The regular session of the society was called to order by the president at 2:00 o'clock.

The President: We will first listen to the report of the committee on credentials, of which, I believe, Judge Moyer is chairman.

REPORT OF THE COMMITTEE ON CREDENTIALS.

Your committee on credentials beg leave to report that the following delegates from various state societies have presented duly accredited credentials:

Col. C. W. Gurney, Yankton, S. D., South Dakota State Horticultural Society; Dr. H. M. Speechly, Pilot Mound, Man., Western Horticultural Society; G. D. Black, Independence, Iowa, Northeastern Iowa Horticultural Society.

(Signed): L. R. Moyer, R. A. Wright, G. A. Anderson, Committee.

The President: If Col. Gurney is in the room we would be glad to have him step forward a moment and give us a word of greeting.

Col. C. W. Gurney (S. D.): Mr. Chairman and Fellow Horticulturists: I am extremely happy to meet with you Minnesota horti-

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culturists for the first time in my life. I have often heard of you as you have heard of us in South Dakota. We as horticulturists look upon you as our "alma mater"; you extended to us a helping hand when we were not in a position to help ourselves. Before the great state of South Dakota had done anything for us, you came to our relief and agreed to give us the benefit of your membership. I bring to you from South Dakota our warmest greeting, and trust that our present friendship may always continue. (Applause.)

The President: We are glad to have Col. Gurney with us. We know of his being identified very closely with the work of horticulture in South Dakota for forty-six years. Col. Gurney is also the author of that book "Northwestern Pomology," with which many of us are acquainted. I will now call on Dr. Speechly, delegate from the Western Horticultural Society, of Manitoba.

Dr. H. M. Speechly (Man.): Mr. Chairman and Fellow Horticulturists: I bring you greetings from the Western Horticultural Society, of Manitoba, and I do so with great pleasure, because we also are very much indebted to the Minnesota Horticultural Society for giving considerable impetus in the good work that is being done by our horticultural society. I do not feel the least bit like a stranger today, because I have corresponded with Mr. Harrison for quite a long time and know him quite well. I also know Prof. Robertson, and Mr. Latham has written so kindly to me I feel as though I knew him, too. This is the forty-second annual meeting of the society, and I feel as though your society and myself were twin brothers, because it is just forty-two years ago since I was organized. (Laughter.) I hope we shall have as pleasant a meeting as the opening augers. We have the promise of a good meeting, live and interesting, and I want to congratulate you upon the splendid attendance you have here so far. I thank you very kindly for inviting me down here. (Applause.)

The President: We take great pleasure in meeting Dr. Speechly. You all know that his work is done in a part of the country where the conditions are harder than we have them here.

We also have with us Mr. G. D. Black, the delegate from the Northeastern Iowa Horticultural Society, and we shall be very glad to hear from him.

Mr. G. D. Black (Iowa): Fellow Horticulturists: I am very glad to meet with you today. I count it a great pleasure. For years I have looked forward to meeting the members of the Minnesota Horticultural Society. I have read a number of your reports and have been very much interested, especially in the matter of seedling apples. I have been looking over your collection and see it is quite replete. I am very glad to be here, and I was sent here to pick up anything I might find that would be of value to us in our work in Iowa. I am going to take back whatever I can, and if you have anything you don't want me to carry back you had better keep your hands on it. Down in Iowa we are indebted to you for the Wealthy apple, which we consider one of the best. Nevertheless we have some good apples which originated in our country, especially at Charles City. A week ago I had the pleasure of going through Mr. Patten's trial grounds,

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and he showed me a lot of seedlings. Most of them are crosses, either crosses or selections he had made. I think the orchard contained about ten thousand. They are staked and labeled with zinc labels, and I think from that collection of ten thousand Minnesota may expect some apples that will be of benefit to her. I thank you for your attention. (Applause.)

The President: We are very glad to know that you appreciate us, Mr. Black, and are pleased to hear from you.

We will now hear from our old friend, Mr. Geo. J. Kellogg, of Janesville, Wis. He needs no introduction. (Applause.)

Mr. Geo. J. Kellogg (Wis.): I am homely enough, and I am not getting any handsomer. I speak in season and out of season, and sometimes I talk too much and sometimes not enough. I came up here to eat turkey, and this is the fourth year I have come up here to eat turkey with my daughter. I am having a fine time visiting and attending the meeting. I never go home from here without taking with me a lot of valuable notes. I am glad to be with you and may say something more as things come up, but if I do not it will be all right.

The President: I do not know that Mr. Gardner is a delegate, but he is a member of this society, and it would seem that the Horticulture Society of Minnesota would not be quite what it ought to be if Gardner, Kellogg and Philips were not present. (Applause.)

Mr. Chas. F. Gardner (Iowa): Mr. President, Ladies and Gentlemen: I came up here to meet my horticultural brethren; I came here to meet the people I consider my brothers and friends. Of all the meetings of various kinds that I have attended I do not know of any that have given me as much pleasure as I get from my trips to Minnesota to attend the meetings of this society. We all have some interest in different branches of horticulture. We want to know how to grow currants, gooseberries, apples and evergreens and everything connected with horticulture.

Our interests and our aims are the same. I am not going to take up any more of your time. I simply want to state that our state society meets next Tuesday at Des Moines and will continue through Wednesday, Thursday and Friday, and I want to see a good delegation from this society down there. I want you to come down and help us, and those who have been present in our meetings know that I generally have some good word to say about your society. I am not ashamed of you when you come down there, because I think in some respects you are beating us in horticultural work, and I feel ashamed of myself. Some way up here you have a knack of tackling things in the right way, in a way that yields you a greater benefit every year, but, unfortunately with us, for a good deal of the time during the last twenty-four years we have been like a couple of pups chewing a rag, one pulling one way and the other another. I am glad to say, however, that conditions are becoming better, and I am in hopes that within the next two or three years we shall be on as good a basis in that respect as you are. I thank you. (Applause.)

The President: I called on Mr. Philips this morning, so I am going to skip him this time.

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The Secretary: He looks as though he wanted to say something else. (Laughter.)

The President: Yes, I know he does, but I am not going to let him. (Laughter.)

I am now going to call upon Mr. Hanchett, of Sparta, Wisconsin.

Mr. W. H. Hanchett (Wis.): I will simply say I am here, and I am glad to be here. I have horticultural interests in the western part of Wisconsin that are so closely identified with yours in Minnesota that as a financial proposition I feel that I can hardly afford to stay away. I feel that I have got to keep watch of you fellows up here and see what you are doing, and if you have got anything over here that I can use I am going to carry it away. (Applause.)

The President: Hope you will; glad to have you with us.

The President: I will appoint the following committees on awards at this time: Grapes, A. Brackett, Excelsior; apples in storage, G. W. Strand, Taylors Falls; top-worked apples, C. E. Older, Luverne; boxes of apples and pecks of apples, R. A. Wright, Excelsior; seedling apples, Clarence Wedge and Wyman Elliot, Minneapolis.

The President: We will now take up the regular program of the afternoon. The first number in our program is an address by Hon. S. M. Owen upon the Canadian Fruit Marks Act, and I have no doubt we shall hear something very profitable and interesting.

Hon. S. M. Owen, of Minneapolis, then spoke upon the subject of "The Canadian Fruit Marks Act and Its Lesson for Us." (See index.)

Discussion:

The President: The next number on the program is right along this same line and has to do with the uniformity of the fruit package. Mr. Wright is going to read a paper on this subject.

Mr. R. A. Wright, of Excelsior, then in a paper discussed the "Uniformity in Fruit Package." (See index.)

Discussion:

The chair then appointed the following additional committees:

Obituary: J. F. Benjamin, Hutchinson; A. B. Lyman, Excelsior; F. W. Kimball, Austin.

Final resolutions: D. W. C. Ruff, St. Paul; Mrs. F. H. Gibbs, St. Anthony Park; J. L. Teigland, Minneota.

MINNESOTA ROSE SOCIETY.

The annual meeting of the Minnesota Rose Society was called to order by the president, Mrs. D. W. C. Ruff, of St. Paul, at 3:15 p. m.

The opening address was delivered by the president, Mrs. D. W. C. Ruff. (See index.)

Miss Eustice charmingly favored the audience with a vocal selection entitled "Roses in June."

Pres. Ruff: I have now the pleasure of introducing to you Mr. Meyer, who has charge of the gardens at Lyndale Park. He has had a large experience in English gardens, and we consider ourselves very fortunate in having him here today to talk to us on the subject of outdoor roses.

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Mr. E. Meyer then presented a paper on the subject of "Out-Door Roses and How to Grow Them." (See index.)

Mr. Meyer: I am glad to read the paper I have prepared on roses. This is a subject that has been much talked about and written about, and there is hardly anything new to say upon the topic.

Discussion:

The President: Our next number is by a gentleman who has a hobby to tell about, Mr. Ruff, who will speak about dahlias.

"Dahlias for Every Garden" was the paper presented by D. W. C. Ruff, of St. Paul. (See index.)

Discussion:

Pres. Ruff: We feel very much flattered in securing Dr. Speechly to tell us about the growing of perennials in Manitoba, where they have a more severe climate than we have here.

Dr. H. M. Speechly, of Pilot Mounds, Man., then read a paper on the subject of "The Gardening of Perennials in Manitoba." (See index.)

Pres. Ruff: I am sorry we are so limited in time that we can not have the opportunity of discussing Dr. Speechly's very interesting and entertaining paper. We have a genius in the person of Mrs. Boardman, who has evolved a garden dress which she is going to exhibit and tell us about.

"A Practical Garden Dress" was then exhibited and briefly described by Mrs. Henry Boardman, St. Paul.

Pres. Ruff: I wish to thank you all for your kind attention this afternoon. The annual business meeting of our society will now be held in an adjoining room, to which you are all cordially invited. We hope to have the pleasure of enrolling many of you as members. We are very glad to see that you are so much interested in our society, which is shown by your attendance here this afternoon.

WEDNESDAY MORNING SESSION.

A meeting preliminary to the general session was held at 9 o'clock, and a question exercise on the subject of "Growing New Fruits" was conducted by Prof. Samuel B. Green. (See index.)

PLANT-BREEDERS' AUXILIARY.

The Wednesday morning session was given over to the Plant-Breeders' Auxiliary. The meeting was called to order by the president, Mr. J. M. Underwood, at 9:30 o'clock.

Pres. Underwood: The first paper on the program this morning will be one by Mr. Wedge, who will give a history of the past year of the Plant-Breeders.

Mr. Clarence Wedge, of Albert Lea, then read a paper entitled: "A Year with the Plant-Breeders of Minnesota." (See index.)

Discussion:

Pres. Underwood: We would like to continue this discussion, but we have so long a program that it will be necessary to pass on to the next paper.

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Mr. Charles Haralson, who is superintendent of the State Fruit-Breeding Farm, will tell us about what has been done at that farm during this past year.

Mr. Chas. Haralson, of Excelsior, then read a paper giving a history of the work done at the "State Fruit-Breeding Farm in 1908." (See index.)

Discussion:

Mr. Clarence Wedge, of Albert Lea, as secretary, then submitted a "Report of the State Fruit-Breeding Farm." (See index.)

Discussion:

Pres. Underwood. The time has now arrived when we should turn this meeting over to the Minnesota State Bee-Keepers' Society. Before vacating the chair I wish to speak on a subject which is very close to my heart, and as this will probably be my only opportunity I will only take a few moments.

The Minnesota State Agricultural Society is just on the point of making important changes and improvements on the state fair grounds. The agricultural department of the state fair is hampered for want of room, and the exhibitors who are interested in that department—and in other departments: for instance, in the horticultural department and the forestry department—are anxious to have a change made, and we are expecting to ask the legislature for an appropriation to put up an agricultural building. We want something where we can make town and county exhibits, vegetable exhibits, and we want a building for that specific purpose. That is something we never have had. Although this is not an agricultural society, the opportunity should not be neglected for providing such a building. The foresters, the horticulturists, the bee-keepers, and the exhibitors of county exhibits, have all been crowded into one building, only large enough for one society or department. So we are going to make an effort to get a new building, and we want $150,000 appropriated by the legislature for a new building dedicated to the farmers of the state. I have made a study of this for four years, and it seems to me as though this was something needed more than anything else on the ground. The State Board of Agriculture is employing the services of an expert landscape architect, and the whole grounds are being remodelled and being planted with trees and shrubs, and when completed and the new buildings required are finished the fair grounds will be a credit to the state for the next fifty or hundred years to come. So I want to ask the co-operation of every one in this society to help bring about this result during the coming session of the legislature, to secure an appropriation for a building of that kind.

The state florists have an association, and a very active one, and want a new building by themselves. Some time they will get it. The grounds will be laid out with a view to giving the florists a separate building, where they can have a splendid display of flowers, which they have never been able to make at any previous state fair. The bee-keepers also want a place to exhibit. They have been tumbled about from one place to another—first in the building that we are occupying now, and then they were shifted into the room provided for

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the dairy exhibit, and the dairymen have a new building. The Women's Federation of Clubs want a new building. I expect they will get a new building, and they want a liberal allowance. The state of New York has appropriated two million dollars to equip their state fair grounds at Syracuse with new buildings, and their state fair compared with ours is perhaps like comparing one of our county fairs with our state fair. So I hope you will bring your influence to bear upon the members of the legislature from your several districts to bring about this greatly desired result.

The election of officers for the Plant-Breeders' Auxiliary was then proceeded with, with the result that all the officers of the preceding year were re-elected.

Pres. Underwood: I wish to thank you for the honor you have conferred upon me. I would like to have some one else take my place who could give the subject more attention, but I will promise you to do the best I can.

Mr. Clarence Wedge: I want to thank you for giving me this very pleasant honor of re-electing me secretary, an honor which I appreciate very much, and I shall appreciate it more if a large number of these members of the horticultural society who are not members of the auxiliary will come forward at the close of the session and enroll themselves with us. If you are a member of the horticultural society and are growing seedling fruits or plants, you are entitled to become a member of this auxiliary without an additional fee.

Mr. Probstfield: I think on the program next year this auxiliary should be given a little more time than we have now, no matter if the session is extended to five days instead of four.

Pres. Underwood: We will now turn the meeting over to the Minnesota State Bee-Keepers' Society, of which Mr. Scott La Mont is president.

MINNESOTA STATE BEE-KEEPERS' SOCIETY.

The meeting of the Minnesota State Bee-Keepers' Society was called to order by the president, Mr. Scott La Mont, at 11 o'clock, on Wednesday morning, Dec. 2d, 1908.

The first number on the program was the "President's Address," by Mr. Scott La Mont.

Following the president's address, Rev. J. Kimball, of Duluth, read a paper on the subject of "The Fascination of Amateur Bee-Keeping." (See index.)

"Foul Brood a Menace to Bee-Keeping" was the subject of a paper presented by Mr. Wm. Russell, state bee inspector, Minneapolis. (See index.)

The meeting was then declared adjourned.

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WEDNESDAY AFTERNOON SESSION.

The preliminary meeting was called to order at 1:30 o'clock, and a demonstration and question exercise was conducted by Prof. Harry Snyder, of the State Agricultural College, on "Soils Adapted to Fruits and the Maintenance of Their Fertility." (See index.)

The regular session was called to order by the president, Sam'l B. Green, at two o'clock.

The President: The first number on our program will be a paper offering some suggestions for the strawberry grower, by Mr. Richardson, of Chippewa Falls, Wis., who is a delegate from the Wisconsin State Horticultural Society.

"Some Suggestions for the Strawberry Grower" were then offered in a paper by Mr. C. L. Richardson, of Chippewa Falls, Wis. (See index.)

The President: The next subject is quite different from this one. Tomorrow morning at 9 o'clock Mr. Geo. Kellogg will conduct a strawberry question exercise in which this matter of strawberry cultivation will be taken up. What Mr. Kellogg does not know about strawberry culture is hardly worth knowing; he is a good one.

Number two on our program deals with the improvement of garden seeds, and this subject will be discussed by the delegate from the Northeastern Iowa Horticultural Society, Mr. Black, of Independence, Iowa.

"The Improvement of Garden Seeds" was considered in a paper presented by Mr. G. D. Black, of Independence, Iowa. (See index.)

The President: The next number on the program will be a paper on the subject of drainage, with particular reference to some drainage work that was done at the State Fruit-Breeding Farm. Prof. Stewart, who will read the paper, is now professor of agricultural engineering at the farm school. I know you will be glad to meet him, and I have the pleasure of now introducing him.

"Drainage at the State Fruit-Breeding Farm and the Principles Involved," were then described by Prof. John T. Stewart, of St. Anthony Park. (See index.)

The President: We are greatly obliged to Prof. Stewart for this interesting paper on drainage.

This concludes our program, and we will now turn the meeting over to the Woman's Auxiliary, and I will ask the president, Miss White, to take the chair.

WOMAN'S AUXILIARY.

The meeting of the Woman's Auxiliary was called to order by the president, Miss Emma V. White, at 2:45 o'clock.

Pres. White: The men of this society are engaged in planting, and perhaps they would not object to having the assistance of the women in distributing the plants or trees. The first number on the program will be by Mrs. Loyhed, who will tell us about the experience of a woman's club in distributing apple trees.

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Mrs. Edgar H. Loyhed, of Faribault, then spoke briefly of an experience in "Distributing Apple Trees via the Woman's Club." (See index.)

Discussion:

Pres. White: Our next topic is a sketch of "Johnny Appleseed," by Mr. Pabody, of Minneapolis. I remember reading a long time ago about a young man who in some way had a disappointment in life some time during the revolutionary period, and who consoled himself by going through the country and planting apple seeds, and we are going to hear about that man today.

Mr. E. F. Pabody, of Minneapolis, then read a paper giving a history of "Johnny Appleseed." (See index.)

Pres. White: The next topic on our program will deal with the woman in the vegetable garden. A woman is almost always interested in the ornamental line of horticulture, but a good many are also interested in the practical side, and Mrs. Ruff is one of those who is interested in that line also. I think Mrs. Ruff ought to appear in a garden dress, such an one as was shown here yesterday.

The "Work of a Woman in the Vegetable Garden" was then detailed in a paper read by Mrs. D. W. C. Ruff. of Bald Eagle Lake. (See index.)

Pres. White: We have with us this afternoon Mr. Nussbaumer, who is superintendent of the St. Paul parks. Mr. Nussbaumer is going to speak on a subject that will be of great interest to many of you who live in prairie villages.

Mr. F. Nussbaumer, of St. Paul, then read a paper on the subject "The Public Square in the Prairie Village." (See index.)

Discussion:

Pres. White: We will now listen to Mrs. Underwood, who will tell us about the fourth season at Lake City in improvement work.

Mrs. Anna B. Underwood, of Lake City, then read a paper giving a report on "A Fourth Season in Improvement Work." (See index.)

THURSDAY MORNING SESSION.

The preliminary Thursday morning meeting was opened at 9 o'clock with a question and answer exercise on the subject of "Strawberries," conducted by Geo. J. Kellogg, of Lake Mills, Wisconsin. (See index.)

The meeting was called to order at 9:30 o'clock by the president, Prof. Sam'l B. Green.

The President: The first thing this morning is the report of the executive committee, by Wyman Elliot, who is chairman.

Mr. Wyman Elliot, as chairman, then submitted the "Report of the Executive Committee." (See index.)

The President: The report of the secretary will be next in order.

The "Report of the Secretary" was next read by Mr. A. W. Latham. (See index.)

Mr. S. P. Crosby: In the bound volumes the names of members appear in alphabetical order. If I should wish to correspond with somebody in the district regarding the condition of things, I wonder

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if it would be possible to have the names of members in the district. What I want to get at is to know whether the secretary could furnish the names of members in each congressional district.

The Secretary: The only way I could get that would be to hunt out the postoffices in each district. If the vice-presidents ask for a list I might give them the names of the better known members in their respective districts. It would be a great deal of work to arrange such a list as Mr. Crosby suggests.

The President: We will now pass to the report of the treasurer, Mr. Geo. W. Strand.

Mr. Geo. W. Strand then submitted the annual "Treasurer's Report." (See index.)

On motion of Mr. Wyman Elliot the reports of the executive committee, secretary and treasurer were adopted unanimously.

The President: Every member of the executive committee has been sent a typewritten copy of this report. It was sent a week ago to each member for approval.

Prof. Thos. Shaw: If I understood the secretary rightly, he recommended that an effort be made to get an entire building at the state fair grounds for the use of the exhibit of this society.

The President: I don't think he made quite that recommendation. His thought was that a building would be turned over to the horticultural society in the natural development of things.

Prof. Shaw: Has the committee on resolutions submitted its report yet?

The President: That report is made the last day.

Prof. Shaw: It seems to me it would be a good idea to embody that recommendation in the form of a resolution to present to the State Fair Board.

The President: There are quite a few members of the society on that board, the secretary, Mr. Elliot, Mr. Underwood, and these men with several other members and myself appeared before the board in company with a number of first rate statesmen and so on—I think we had as many as twenty people who appeared before that board, and we made as strong a presentation of the matter as we could.

Prof. Shaw: You were able to represent that you had the entire backing of this society, that there is a strong organization behind you?

The President: There is no objection to taking action, however.

The Secretary: Prof. Shaw, why don't you prepare a resolution to present?

The President: We will now take up the reports of the vice-presidents. They will not be read, because they will be printed in the report, but two minutes will be allowed each vice-president in which to state anything that he may deem of special interest occurring in his district. I am going to call on the vice-president of the First District, Mr. S. H. Drum, of Waseca. (See index.)

The President: These are very interesting figures that Mr. Drum has given us, and I wish we had time to hear more of them.

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I am now going to call on Mr. John Bisbee, of the Second Congressional District.

Mr. John Bisbee (Second District): There is only one item I think worth while mentioning, and that is we had some experience in spraying apple trees in our district to a limited extent, and we would like to hear more on this spraying subject, and I am very glad there is going to be a discussion before this meeting on that topic.

The President: Mr. C. H. Andrews, of Faribault, who represents the Fourth Congressional District, is not present, neither is Mr. Thomas Redpath, who represents the Fifth District; I will therefore call on Mr. Selvig, of the Seventh District.

Mr. C. C. Selvig (Seventh District): The apples did not amount to much and there were no plums. The Compass Cherry has done very well. There was no rot these last two years.

Strawberries and currants seem to have done well in the neighborhood. There were no plums; they all went to pockets. There was no blight, except a little in Pope County; otherwise there seems to have been no blight this season.

There has been a light water fall, and the trees have held their leaves until late in the fall; that is generally reported. I have a written report covering my district which I have filed with the secretary.

The President: Mr. Wilwerding, of the Sixth Congressional District is not present, and I am going to call on Mr. Crosby, of the Eighth District. (See index.)

The President: Prof. Robinson, of the Ninth District is not present.

We will next have the reports of the superintendents of trial stations, and I am going to call on Mr. Dewain Cook to report for his station. (See index.)

The President: Mr. McLeran is not here, and I am going to call on Capt. A. H. Reed for the report of the Glencoe Station. (See index.)

The President: I see Mr. Lyman, of the Excelsior Station, and Mr. Harris, of the La Crescent Station are not here, and I am going to call on Judge L. R. Moyer, of the Montevideo Station. (See index.)

We will next have a report from Mr. F. J. Cowles, of the West Concord Station. (See index.)

The President: The next report is by Rev. John B. Katzner, of Collegeville, but as he is not present, I am going to call on Seth H. Kenney, of the Waterville Station. (See index.)

The President: I see Senator Cashman is present now, and I am going to ask him to say a few words about the Owatonna Experiment Station. (See index.)

The President: I think this concludes these reports, and we will now have the report of the committee on fruit list, of which Mr. Andrews is chairman.

Mr. J. P. Andrews then submitted the report of the committee on fruit list, and moved its adoption. (See index.)

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The President: We cannot prolong this discussion any further, and must finish the rest of our reports. We now come to the reports of auxiliary societies, and as the Minnesota Bee-Keepers' Society is not represented, I am going to call on Mrs. F. H. Gibbs to report on the Minnesota Rose Society. (See index.)

Mrs. F. H. Gibbs (Secy. Minn. Rose Society): Our society is only five years old, and in comparing it with other rose societies we find that our society is doing remarkably well for being so young. We were quite discouraged in a way when we found that in order to give our premiums we would have to solicit for them, because we thought we were beggars, but upon investigation we found that other societies were doing the same thing. We have doubled our membership roll in the past year; and when I became secretary two and a half years ago, we were in debt, but now we have a nice balance in the treasury. We are very much pleased to meet with the horticultural society, and as an auxiliary society we have had considerable help from it.

I am pleased to see so many men at our meeting, but in looking over the audience I find there are only twelve ladies here. I wish the horticulturists would remember when they come to this meeting that if they do not like to hear about the growing of roses, but want to hear more about the growing of apples, that they bring the women along, and have them attend the meetings of the rose society, and the woman's auxiliary. I think they would enjoy coming here, and we would enjoy having them here. I wish to thank the members of the society for the great help they have given us. (Applause.)

The President: There are good suggestions in that report. The next are the reports of the Woman's Auxiliary, the Southern Minnesota Horticultural Society, the North Dakota Horticultural Society, the Kandiyohi County Horticultural Society. If there is any one here from the Kandiyohi Society we will be glad to hear from them.

Mr. C. C. Selvig (Kandiyohi): I might say that we are doing very well. We have thirty-three paid up members. We had our meeting the last Saturday in November, and we had a good meeting. We are working hard, and to show what we are doing, I have here a photograph of our exhibit, if any one cares to look at it.

The President: I think that photograph shows up Kandiyohi county in fine shape. The exhibit is certainly put up in a business-like way.

Mr. Selvig: We do lots of top-working, and we are getting some things over from southern Sweden.

The President: Do you mean you are top-working Swedish varieties?

Mr. Selvig: Yes, sir.

The President: What are you top-working on?

Mr. Selvig: Hibernal and Virginia.

The President: Those are good varieties; certainly hardy varieties.

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The Minnesota State Forestry Association is next on the program to be heard from. Mr. Cheyney, the secretary, had an idea of making a report this afternoon. I know the society is making progress and has something like sixty members, and there is quite an interest being taken in the forestry association, and we are doing what we can to assist it through a little publication called the "Minnesota Forester." An interesting thing in regard to this matter is that at the top of his paper we have these words: "Forestry Schools, the Foundation of Forestry Wealth." That is, we must look to the coming generation for the real benefit to forestry. You take this society here, and we must have a lot of young people coming in to carry on our horticultural work, or else it is not going to amount to anything. The best way to carry on a thing of that kind and put it on a permanent basis is to educate the young, and that is the feature that it is principally the desire of the forestry association to encourage. There is quite an increased interest in this subject all over the country.

I want to call attention at this time to a communication from Prof. Freeman. He is professor of vegetable pathology at the State Experiment Station. He has published a book entitled "Minnesota Plant Diseases." The book can be obtained upon request. It is a book of as much as 500 or 600 pages, nicely illustrated, and takes up different plant diseases common in this state, and it is well worth while to add it to your libraries as long as you can do it without expense. Even if you should have to pay a dollar for it, it is well worth it. It is a book you could not buy from the publishers for $2.50. I have a communication from Prof. Freeman, who is now in Washington. He is carrying on a lot of work for the United States Government. Prof. Freeman has sent a formal communication to the society, in which he calls attention to the division of botany and plant pathology at the experiment station, and he says he desires to learn and help us to learn all we can about plant diseases that are common in Minnesota, that it is his desire to make himself helpful to us. He is at the experiment station, and when you have a plant disease you do not know about, send him a specimen and correspond with him in regard to it, and I am very thoroughly convinced that he will be helpful to you. That is what he desires, and he is capable of helping almost any of us. It makes no difference whether the disease is injurious to fruit or to vegetables. Tell him your trouble, and I think he will be able to help you.

I am going to call on Mr. J. P. Andrews to make a report for C. H. Andrews.

Mr. J. P. Andrews: I have nothing to report. Mr. C. H. Andrews has a report which he will file with the secretary.

The President: I understand Prof. Shaw has a resolution he wishes to present.

Prof. Thos. Shaw then submitted a resolution asking for a new building for horticulture, and moved its adoption.

The President: As it reads it is just a little bit vague. It speaks of a place for the exhibition of fruits, flowers and vegetables. The

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intention of the people that are especially interested is to take the vegetables out of the building. It should merely refer to fruits and flowers, and leave out the word "vegetables." I think that will probably help the matter.

Prof. Shaw: Mr. President, I submitted that resolution not only because of the needs of the State Horticultural Society, but also of the needs of agriculture in other lines. I have happened to be one of the judges of these exhibits in that building, in fact I was a judge last year, and those exhibits were so many that they could not be all displayed inside of the building. An additional space had to be provided for them outside of the building, and the exhibits displayed outside were not properly displayed because of the lack of opportunity to display them. I heard various complaining remarks made by exhibitors in all of those lines, that there was not room enough for them to properly display their exhibits, and that if they had the proper space they could make much better exhibits in all of those lines. I think therefore, this resolution ought to do something toward securing that end, and it is certainly imperative that a building must be erected very soon to accommodate agriculture in the broad sense of the term. That building, of course, is yet to be erected, but it will leave entire the space for exhibits of horticulture and of flowers, and, as I stated in the resolution, I am absolutely certain that if that space can be secured that Minnesota would make such an exhibit in those lines as would be hard to overcome by any other state.

Capt. A. H. Reed: Have we not a committee on resolutions?

The President: Yes, but we can take it up at this time.

Capt. Reed: I want to move to have these resolutions referred to the committee on resolutions. My object in having this done is to have them put in such form that we may vote upon them intelligently. From the intimation of the president I gather that there is something lacking in the resolution before us, and I therefore think it would be better to have it referred to the proper committee.

Mr. Probstfield: I do not like to see this resolution suppressed in any manner. If I were sure that this resolution would be reported by the committee on resolutions, I would be in favor of referring it to them and have the committee report back to the society.

The President: We could put in the resolution whatever we wanted. Whether the committee reports it back, we can report it out ourselves if we want to do so. The idea is simply to get it in proper shape.

Mr. Probstfield: In 1898 you will probably remember where the agricultural exhibits were placed. It was a dark place hardly suitable for a stable, and I said I would not set foot upon the state fair grounds again until we had proper accommodations. Horse racing was well taken care of, but agricultural exhibits had to take what was left. I told the farmers if they would not make a kick they had just exactly what they were entitled to.

The President: The way I understand the situation—and I understand it, I think, because we have presented this matter to the

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state fair board. We had a strong committee there representing the agricultural interests of the state, and we had a two-hours' session with the board looking to ways and means of securing this needed room. When we got all through, the board expressed their desire to do this, and said they had never had such a representative delegation before them, and they desired to carry out the wishes of the delegation; but they said they had got to have a new grandstand this year because the grandstand they had now had been condemned by the building inspectors of both cities, and that they must build a new grandstand. They said it was necessary to take the upper deck off from the grandstand, or at least not permit any people to occupy those seats, and they felt that they must ask the legislature for a new grandstand, which would cost somewhere in the neighborhood of $250,000, and they thought they ought to have that before they got a new agricultural building. They left it in just that way, and I know the general feeling is that the board of administration of the agricultural society would not recommend this building. I don't expect them to recommend it, because I expect them to recommend a new grandstand. In my humble opinion this building will have to be secured by a special pull, pushed along by special interests.

Prof. H. A. Huston (Chicago): It seems to me a rather curious procedure for this society, which I believe is the largest horticultural society in the world, exhibiting at the largest state fair in the world, that you are willing to take a building that somebody else does not want. If you go down and tell your legislature that you want a new building and that you have got to have it, you can make it mighty interesting down there. If you go down there and tell them that you are no longer going to put up with an old shell to exhibit in, and that you might as well not exhibit at all, I am pretty sure you will be likely to get it. It seems to me to take what somebody else leaves is unworthy of this society. (Applause.)

The President: Right along that line I might say that there is this feature about it. The present building while well adapted for horticulture and fruit exhibits is not well adapted for floral exhibits, and of course if we had the means to put up a building, or have the agricultural society put up a building, we would try to put up something adapted to our wants. On the other hand the statement is made that this building would not be big enough to accommodate all. It is a matter that requires pretty careful attention, and I do not know that we can tell at this time just what would be best to do. What I want to do is to give these people the necessary information so they may know of our needs. I don't think that we need to make anything very elaborate of this. I think that about all that would be necessary would be something like the following: "Resolved, that the horticultural society is dissatisfied with its present quarters at the state fair grounds, and wants a building especially adapted to its purpose." (Applause.) I think a resolution like that will cover the ground.

Capt. Reed: I would suggest that the president draw up a resolution himself. (Laughter.)

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On motion of Judge L. R. Moyer the resolution suggested by President Green was unanimously adopted as a substitute for the resolution submitted by Prof. Shaw.

CONTINUATION OF THURSDAY MORNING SESSION.

The President: The Norway poplar has attracted a good deal of attention. We have before us here several trees, and I do not know why it would not be a good plan to find out all we can about this Norway poplar. It has come to stay, and I think it is a good thing. What Mr. Sahler is going to tell you about it I don't know, but we have got five minutes in which Mr. Sahler will be permitted to tell you what he knows about the Norway poplar.

Mr. Emil Sahler, of Waseca, then read a paper on the "Economic Value of the Norway Poplar." (See index.)

On motion of Mr. Brackett the meeting adjourned.

THURSDAY AFTERNOON SESSION.

The meeting was called to order by the president, Prof. Green, at 2 o'clock.

The President: We are going to change our program a little, and I know you will be pleased to hear from our old friend, Mr. C. G. Patten, of Charles City, who has been so long and favorably known to us in connection with his work in horticulture. I have the pleasure of introducing to you Mr. Patten.

(See index.)

Mr. F. W. Kimball: I wish to introduce the following resolution:

"Resolved that it is the sense of this society that the sending out of seeds by the Department of Agriculture at Washington is a waste of funds and energy and should be discontinued, and that a copy of these resolutions be sent to each member of congress from our state and to the Secretary of Agriculture at Washington."

On motion of Mr. Kimball the resolution was unanimously adopted.

The President: I have the honor to present to you at this time the president's annual address. I have made it short. I am calling you down all the time for being too lengthy, and I have tried to set you an example.

"The President's Address" was then read by the president, Prof. Samuel B. Green. (See index.)

Mr. A. Brackett: Mr. President, I wish to present the following resolution:

"Resolved, That we earnestly request the Board of Directors of the Minnesota State Agricultural Association to exclude at future state fairs alcoholic liquor exhibits of any nature whatever, and also to refuse to accept advertisements of the same in the premium lists."

On motion of Mr. Wyman Elliot, the resolution was unanimously adopted.

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ANNUAL ELECTION OF OFFICERS.

The time for the election of officers having arrived, the president appointed as tellers, Messrs. Max. Pfaender, J. L. Teigland and G. D. McKisson.

Hon. Thos. Cashman submitted the following resolution:

"Owing to the wonderful growth of the Minnesota Horticultural Society and the prospect of this growth being kept up, the executive board of the society realize that the time is not far distant when a site where a suitable building might be erected that the society could call 'home' should be purchased. Therefore be it resolved—that this society in convention now assembled do instruct and empower the executive board to purchase a suitable site to cost a sum not to exceed the amount of funds now in the treasury of the society; where the society may at some future date, if it deems advisable, erect a building suitable for its needs."

The President: I wish to say that this resolution originated with the executive committee. We asked Mr. Cashman to draw the resolution.

On motion of Mr. Cashman the resolution was unanimously adopted.

Nominations for president being in order, Mr. R. A. Schutz placed in nomination the name of Prof. S. B. Green, to succeed himself, and a ballot being taken, Prof. Green was unanimously elected.

The President: In regard to the election of vice-president, it has been customary to change them each year. This list is made out simply to expedite matters. The list is as follows:

First Cong. District, J. A. Howard.....Hammond
Second Cong. District, G. D. McKisson.....Fairmont
Third Cong. District, C. E. Swanson.....Cannon Falls
Fourth Cong. District, F. H. Gibbs.....St. Anthony Park
Fifth Cong. District, E. B. Miller.....Minneapolis
Sixth Cong. District, Frank Brown.....Paynesville
Seventh Cong. District, S. J. Walgren.....Willmar
Eighth Cong. District, H. G. Groat.....Anoka
Ninth Cong. District, R. M. Probstfield.....Moorhead

On motion of Capt. A. H. Reed, the secretary was instructed to cast the ballot of the society for the nominees for vice-presidents as read.

For the office of treasurer, Mr. Wyman Elliot placed in nomination the name of Geo. W. Strand.

The President: It may seem a little irksome to some of you to have to go through this formal ballot when there is but one name in nomination, but some years ago we almost broke up the society by not doing so, and we feel that it is absolutely necessary to carry on the election in this way.

Mr. Clarence Wedge: I wish to say in regard to this ballot that it appears to me that an officer who serves an organization as faithfully as our president has served this society during his incumbency, deserves to know by an absolute ballot, and not by a hasty viva voce

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vote, the sentiment of the society, and we can best show by a formal ballot how much we appreciate his services. That applies also to the other officers.

The President: I can assure you, ladies and gentlemen, and members of the society, I appreciate the honor. I feel it is an honor, and there is no use for me to say I did not want the office; I did want it, and I am glad to be elected, and I will serve you during the coming year just as well as I know how. (Applause.)

Dr. H. M. Speechly (Manitoba): May I express my admiration of the way in which you have handled this convention, and I shall always remember the uniform courtesy and consideration with which you have treated those participating, and which has contributed so much to the success of this gathering. Personally I wish to thank you for the courtesies I have received at your hands. (Applause.)

The Secretary: This is a good opportunity to say a word about the horticultural society. I have been so busy I have not had time before. I wish to say that anyone may become an annual member of this society by the payment of $1.00. This will entitle the member to a bound copy of the report of last year, a volume of over five hundred pages, bound in cloth, with an index referring to everything in the book. Such a member will also be entitled to the monthly magazine, a 40 page publication, of which I hold a copy in my hand; also to plant premiums, which are sent out for experimental purposes, to all members who apply for them. If you prefer to become a life member you can do so by the payment of a fee of $10.00, and that can be paid in two annual installments of $5.00 each year, if it is so desired.

The ballots for treasurer having been counted, it was shown that Mr. Geo. W. Strand received seventy-four, with four scattering.

The terms of Mr. Underwood and Mr. Wedge having expired as members of the executive board committee, they were placed in nomination to succeed themselves, and were unanimously elected.

Mr. Clarence Wedge: I want to express my appreciation of the honor you have accorded me. I did not expect to get ahead of Prof. Green in his unanimous vote, and I certainly did not even expect to do as well.

Mr. Geo. J. Kellogg (Wis.): I have been here so long that I know when a man is nominated I can write down in my little book that he is elected. I have watched this thing for a long time, and it has always been unanimous. (Laughter.)

MINNESOTA STATE FORESTRY ASSOCIATION.

The annual meeting of the Minnesota State Forestry Association was called to order at three o'clock by the president, Hon. S. M. Owen, who delivered a brief introductory address. (See index.)

Pres. Owen: The first number on the program will be an address on the subject of "Fire Fighting in Our National Forests," by Mr. G. E. Marshall, the supervisor of the Cass Lake Reserve. (See index.)

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Pres. Owen: We are now to have some short talks by the students of the Minnesota School of Forestry. The first one relates to summer work at Itasca Park, about which Mr. Hamilton will enlighten us.

"Summer Work at Itasca Park" was then described in a paper read by Mr. Carl Hamilton. (See index.)

The President: I want to say to you that these boys had the most enjoyable and the most practical school days ever known.

Pres. Owen: I see I overlooked one number, and we will now listen to Prof. Wentling who will tell us about prairie plantations.

Prof. J. P. Wentling then read a paper on the subject of "Prairie Plantations." (See index.)

The president then appointed as a nominating committee Messrs. S. B. Green, Geo. W. Strand and C. E. Older.

Pres. Owen: Before the committee retires I wish to say to them that the present president informs me that he is not a candidate for re-election.

The next short talk will be by another of the students of the forestry school, Mr. Clarence French, who will tell us what they are doing in the way of afforestation in the sand hills of Nebraska.

"Afforestation in the Nebraska Sand Hills" was the subject of a paper presented by Mr. Clarence French. (See index.)

Discussion:

Pres. Owen: The next topic will also be given by a student, who will describe the scenes in a Washington lumber camp.

"In a Washington Lumber Camp," was the subject of a paper read by Mr. Raymond Orr. (See index.)

Pres. Owen: We have still another student with us, who is going to tell us about the Montana National Forests, and I am pleased to introduce to you Mr. Gilles. (See index.)

Mr. James Gilles then read a paper describing the conditions "In a Montana National Forest." (See index.)

Pres. Owen: We will now listen to the report of the secretary.

Mr. E. G. Cheyney, St. Anthony Park, then submitted the "Report of the Secretary." (See index.)

On motion of Prof. S. B. Green, the report of the secretary was unanimously adopted.

Mr. Clarence Wedge then introduced the following resolution regarding tree seeds:

"Resolved by the Minnesota State Forestry Association that in view of the great difficulty experienced by our nurserymen in securing good strains of seed of the European conifers that will produce trees of valuable timber qualities, from the seed houses and seed collectors of Europe, that the forestry service of the federal government be and hereby is requested to take up the matter of securing seed suitable for forestry purposes at the earliest practicable time to the end that the nurseries of our section may be able to secure seed of dependable qualities."

Discussion: (See index.)

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The motion offered by Mr. Wedge, having been duly seconded, was put to a vote, and the resolution was unanimously adopted.

Pres. Owen: We will now listen to the report of the committee on nominations.

Mr. C. E. Older: Owing to the modesty of Prof. Green, it devolves upon me to make this report. For president, M. O. Nelson, Minneapolis; vice-president, Prof. T. L. Haecker, St. Anthony Park; members executive committee, A. W. Latham, Wyman Elliot and Prof. S. B. Green; secretary and treasurer, E. G. Cheyney.

On motion of Mr. Older the report of the committee was adopted, and the nominees named declared unanimously elected for the ensuing year.

Pres. Owen: This concludes the program of the forestry association, and in my estimation it has been a most instructive and interesting meeting, and I hope you have a clearer idea of the scope and ambition of the Minnesota Forestry Association than you had when you came here. (Applause.)

Mr. M. O. Nelson is the newly elected president of this association, and he will administer the affairs of this association during the coming year. I now have the pleasure of introducing my successor, Mr. Nelson, who has just been elected as president.

Pres. M. O. Nelson: Members of the Forestry Association: I feel very diffident in taking the position that has been vacated by my predecessor, and with the little information and experience in life I have had I can at best only rattle around in the chair that has been occupied by Mr. Owen. One of the qualifications for this office is love for a tree, a love for planting trees. I do not know of anything more fascinating in the material world than the planting of trees, and it has come to me since I have been associated with the lumber business that the time is coming all over our country when the natural timber supply will be exhausted unless something is done to replace it. People will grow cold for lack of wood in this country before plantations that may be planted through forestry organizations, such as this in Minnesota, will become of practical value. The time will come and has come when our people will awaken to the fact that we must plant as fast as we destroy.

FRIDAY MORNING SESSION.

The meeting for the conduct of the "Question Hour" was called to order at 9 o'clock, and was in charge of Mr. Dewain Cook, of Jeffers, the topic being "Plums for General Cultivation."

The session was called to order by the president, Prof. Sam'l B. Green, at 9:30 o'clock.

The President: We will now take up the regular program, and first I will call for a paper by Mr. Huston, of Chicago.

Mr. H. A. Huston, of Chicago, then read a paper on the subject of "How to Raise More Fruit and Less Wood." (See index.)

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Discussion:

The President: We will now pass on to the next subject, and Mr. Richardson is going to tell us about a half century's experience in orcharding. Mr. Richardson is one of our old standbys. (Applause.)

"Orchard Notes from a Half-Century Standpoint," was then read by Mr. S. D. Richardson, of Winnebago City. (See index.)

Discussion:

The President: We will now take up the general subject of nursery topics, and as the gentleman who is first on the program is not present, I will call for the paper by Col. C. W. Gurney, of Yankton, who is the delegate from the South Dakota Horticultural Society. Col. Gurney is going to tell us something about the distribution of nursery stock.

Col. C. W. Gurney, of Yankton, then read a paper setting forth his views on the "Distribution of Nursery Stock." (See index.)

Discussion:

The President: The next paper is somewhat along this same line and takes up a legal phase of horticulture, dealing with the rights of buyers and sellers of stock, and so forth. This subject will be considered by Mr. Coe, an attorney, of Minneapolis.

Mr. Wm. T. Coe, of Minneapolis, then read a paper upon the subject of "Legal Protection for Grower and Planter." (See index.)

Discussion:

Mr. Dewain Cook, of Jeffers, in a paper then described the "Pruning of the Orchard—When, How and Why." (See index.)

The President: Before discussing this subject I am going to call for the next paper which is along this same line, and has to do with pruning for fruitfulness. Mr. A. D. Brown, of Baraboo, Wis., will tell us about this kind of pruning.

"Pruning for Fruitfulness" was discussed in a paper read by Mr. A. D. Brown, of Baraboo, Wis. (See index.)

Discussion:

The President: The next subject is by Mr. Miller on the subject of pruning in small fruit culture.

Mr. E. B. Miller then presented the subject of "Pruning in Small Fruit Culture," illustrating his theme by pruning vines, etc., on the platform.

The President: Our last paper is on the subject of ornamental pruning, that is, trees and shrubbery. This paper will be read by Mr. Wirth, superintendent of Minneapolis parks. (Applause.)

"Pruning Shade and Ornamental Trees and Shrubbery" was described and illustrated by Mr. Theo. Wirth, of Minneapolis. (See index.)

FRIDAY AFTERNOON SESSION.

The regular session of the afternoon was called to order at 2 o'clock by the president.

The President: I want to ask Mr. Cashman to present the report of a committee that was appointed a year ago.

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Mr. Thos. Cashman: The committee which I represent was appointed a year ago for the purpose of finding some way of assisting Mr. Charles G. Patten in his work. We all know the extremely valuable work Mr. Patten has done for the northwest. The committee beg leave to report that the matter was taken up at the Iowa meeting some weeks after the meeting was held here a year ago. Mr. Wedge was present and stirred up the enthusiasm of the members to such an extent that they appropriated $500 to assist Mr. Patten in his work. We have corresponded with the department at Washington and have interested Secretary Wilson and Col. Brackett, who have brought about the result of sending out a committee to investigate Mr. Patten's work, and while nothing in particular has been done by that committee yet we know it will result in good in the future.

The President: Both Senator Cashman and Mr. Wedge have been very active in this matter, and it was largely through their efforts that the Iowa association was induced to make an appropriation of $500, and they have drawn attention to Mr. Patten's work in a way that cannot help but be beneficial to all concerned. I think Mr. Patten feels that his work is of bigger importance than ever before, and I think the national government will do something in the way of aiding him.

Mr. Wyman Elliot: I think there is not a member here but what appreciates what Mr. Patten has done, not only in his actual work, but by the many able presentations he has made here in regard to his methods of work. We all feel that we owe him a debt of gratitude. (Applause.)

The President: This afternoon it will be necessary to limit the papers to ten minutes, but there will be a chance for discussion. The subject this afternoon is "Orchard Spraying," and I am going to call on Mr. Carl Steller, of Excelsior, who has had ten years' experience in spraying.

Mr. Carl G. Steller, of Excelsior, then gave an account of "Ten Years' Experience in Orchard Spraying." (See index.)

Discussion:

Prof. F. L. Washburn, St. Anthony Park, then gave a brief exposition covering "Two Years in Spraying Experiment." (See index.)

Discussion:

The President: I know you were all glad to hear Prof. Washburn. We are now going to have something by Prof. Ruggles. Prof. Ruggles has made a special study of the economic side of this question. He had quite an experience in New York; he was connected with nursery inspection in Wisconsin and also in Minnesota, and has been very successful in the application of this thing. I have the pleasure of introducing Prof. Ruggles, from the Experiment Station. (Applause.)

Prof. A. G. Ruggles then read a paper on the subject of "Spraying." (See index.)

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Discussion:

The President: This subject of spraying will be continued in another paper, which will be read by Mr. Brackett.

In a paper prepared by Mr. A. Brackett, of Excelsior, he described the use of "Arsenite of Soda as a Fungicide." (See index.)

Discussion:

The President: We will now take up the subject of top-working, and I propose to cut this thing down to three minutes. Philips didn't say he would consent, but he is a good fellow and will have to consent. (Laughter.)

Mr. Philips: This is the toughest proposition I ever had put to me. Latham asked me to come up here from Wisconsin to talk on top-working, and as soon as I am ready to begin Green jumps on me and says I must get through in three minutes. Why didn't he jump on me at the time I was asked? (Laughter.)

The Secretary: I told you I was going to give you the place of honor, so we could hold the audience.

Mr. Philips: Here I have been top-working for thirty years, and I have been asked to come here to tell my experience, and then they allow me three minutes to tell you what I have accomplished in thirty years! (Great laughter.)

"Top-working Notes of a Long Experience" were then detailed in a paper read by Mr. A. J. Philips, of West Salem, Wisconsin. (See index.)

The President: The last number on the program is a paper along the same lines as that of Mr. Philips. Mr. Kimball will give his experience.

Mr. F. W. Kimball, of Austin, then described "A Ten Years' Experience in Top-working." (See index.)

Discussion:

The President: This is a very interesting subject, and I wish we had more time to devote to it.

The "Two Minute Talks" followed. (See index.)

Mr. Jayne then favored the audience with another selection, after which the meeting was closed by the singing of "America," in which all joined.

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Meetings of Executive Board in 1909.

Record of meetings held in the office of the secretary at 8:00 p. m. Nov. 30th, 1908.

All the members of the board were in attendance except J. P. Andrews.

The account of the secretary since the last meeting of the board, from June 20th to Nov. 27th, was examined and found correct, and an order drawn for the amount, $714.13.

The resignation of Mr. J. S. Parks as superintendent of trial station was presented, and upon his urgent request accepted.

A new trial station was created in the Red River Valley, in Hendrum, on the farm of Ole J. Hagen, and he was appointed as superintendent.

The treasurer's account of premiums paid at the summer meeting, 1908, was audited and allowed: $99.25.

It was decided to allow the Minnesota State Forestry Association $25 per month during the year 1909 to assist in the work of that society.

The chairman of the board was authorized to appoint a committee of two with himself as a third member to investigate the matter of the purchase of a lot suitable for a future home for the society.

Meeting adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. LATHAM, Secy.

Record of meeting held at Dayton's Restaurant, Minneapolis, 12:30 p. m., Dec. 4th, 1908.

Present: Wyman Elliot, T. E. Cashman, J. P. Andrews, Clarence Wedge, A. W. Latham and Sam'l B. Green.

Mr. Elliot was elected chairman of the board for year 1909.

A. W. Latham was elected secretary for the year 1909 at a salary of $1,600.

The salaries of the president and treasurer for 1909 were fixed at $25 each.

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It was decided to make the necessary effort to secure legislation to increase the issue of the report of the society by 1,000 volumes.

Another trial station was created at Paynesville, Minn., with Frank Brown as superintendent.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. LATHAM, Secy.

Record of meeting held in the office of the secretary at 8:00 p. m., Monday, June 26th, 1909.

Present: Wyman Elliot, T. E. Cashman, Sam'l B. Green and A. W. Latham.

The secretary's accounts from the preceding meeting of the board were examined and many matters of interest considered, but there not being a quorum no business was transacted.

The meeting adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. LATHAM, Secy.

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MEMBERSHIP, 1909

Annual Members.

This list, instead of being printed alphabetically as regards to the names of the members, is placed in order of postoffices alphabetically—not strictly so but near enough for all practical purposes. So that the members in any locality can readily see what others are members of the society in the same vicinity or, indeed, any part of the state in which they may be interested. It is hoped that this information will prove of special value in increasing the fraternal spirit among the membership.

The life members are not included in this list, but will be found on pages 525 and 526.

Hermanslie, Lars.....Abercrombie, N. D.
Mohl, Fred.....Adrian
Boyle, M. S.....Adrian
Hanson, A. L.....Ada
Beck, Wm. M.....Ada
Becker, J. C.....Adrian
Farmer, C. R.....Ada
Natwick, T. T.....Ada
Bratland, A. D.....Ada
Aschbach, Beruh.....Ada
Sprung, H. F.....Ada
Hoverstad, T. A....Agri. College, N. D.
Myres, J. J.....Akra, N. D.
Highby, L. P. H.....Albert Lea
Clawsen, P.....Albert Lea
Dahlen, O. E.....Albert Lea
Berthelsen, Christ.....Albert Lea
Peterson, O. M.....Albert Lea
Massee, A. W.....Albert Lea
Wedge, Robert.....Albert Lea
Hansen, H. F.....Albert Lea
Hibbs, D. R. P.....Albert Lea
Sanderson, Oscar.....Albert Lea
Larson, John P.....Alexandria
Hoyne, A. J.....Albert Lea
Street, Dr. A. H.....Albert Lea
Larson, Peter.....Albert Lea
Horton, W. H.....Alexandria
Yegge, C. M.....Alpena, S. D.
Trenham, N. J.....Alexandria
Wedge, Mrs. Clarence.....Albert Lea
Lester, Erwin.....Alpha
Dickson, W. A.....Almena, Wis.
Boothroyd, Richd.....Alexandria
Farnsworth, C. H.....Albert Lea
Jensen, C. M.....R. 3, Albert Lea
Frydholm, M.....Albert Lea
Share, J. O.....Albert Lea
Hansen, Chris.....Bx. 243, Albert Lea
Truax, S. M.....Amiret
Jasperson, L. W.....Albert Lea
Stoa, Martin.....Albert Lea
Unumb, P. O.....Alexandria
Carnegie, A. E.....Alexandria
Cooper, Thos.....Alexandria
Klukow, H. C.....Albert Lea
Lee, S.....Alexandria
Flindt, Mrs. Lillian A.....Albert Lea
Tidd, Mrs. John N.....Alborn
Nelson, C. J.....Aldrich
Morrison, Wm.....Aldrich
Larsen, Niels J. C.....Alpha
Young, Wm.....Alexandria
Kronshaar, J. C.....Alden
Eystad, Christ.....Alberta
Muyres, Theo.....Albany
Robson, And.....Alden
Nelson, C. A.....Alden
Gustavsen, S.....Alden
Norton, Myron A.....Alden
Johnson, J. W.....Alden
Anderson, A. S.....Alden
Hanson, Frank O.....Alexandria
Caswell, Arthur A.....Anoka
Groat, H. G.....Anoka
Lane, J. W.....Anoka
Taylor, M. F.....Anoka
Sibbert, Mrs. J. H.....Annandale
McGuire, S. H.....Annandale
Schwab, Jacob.....Anoka
Suambeck, Wm. W.....Aneta, N. D.
Cameron, G. B.....Aneta, N. D.
Shannon, Robt.....Annandale
Lailand, Halvor K.....Aneta, N. D.
Ives, W. S.....Annandale
Dunton, S. H.....Annandale
Fellows, M. E.....Annandale
Lauts, Jacob.....Annandale
Cofield, L.....Annandale
Ridgway, Dr. A. H.....Annandale
Green, Peter W.....Annandale
Maurice, Geo.....Annandale
Bennet, E. A.....R. 1, Anoka
Fraser, G.....Anoka
Wise, H.....Appleton
Dickey, E. V.....Appleton
Johnson, Nels E.....Bx. 47, Appleton
Clapp, Geo.....Appleton
Erdahl, Ole.....Appleton
Heinicke, Fred.....Appleton
Berger, Geo.....Arlington
Melgaard, H. L.....Argyle
Cook, H. C.....Argyle
Wilen, Chas.....Argyle
Renneke, E. A.....Arlington
Arlington High School.....Arlington
Streissgult, Theo., Jr.....Arlington
Bethke, Fred.....Arlington
Weckwerth, Robert.....Arlington
Barthmen, John.....Arlington
Fisher, R. W.....Arlington
Hulburt, H. H.....Argyle
Peterson, Alvin.....Astoria, S. D.
Torgerson, H. P.....Astoria, S. D.
Marden, Ezekiel.....Ashby
Tollefson, M.....Ashby
Johnson, Bennie.....Ashby
Anderson, J. B.....Ashland, Wis.
Hoff, A. T.....Ashby
Hoff, Geo. G.....Ashby
Schaffer, Albert.....Ashby
Balgaard, Jos.....Ashby
Nelson, Chas.....Ashby
Peterson, P. H.....Atwater
Broman, Aug.....Atwater
Synnerholm, C. J.....Atwater
Flygare, Hans H.....Atwater
Nelson, Chas.....R. 2, Atwater
Nelson, F. A.....R. 6, Atwater
Wicklund, John.....Atwater
Anderson, J. S.....Atwater
Flygare, A.....Atwater
Dahl, Louis D.....Atwater

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Kimball, F. W.....Austin
Decker, J. S.....Austin
Galloway, J. E.....Austin
Kinsman, A. N.....Austin
Hawkins, J. C.....Austin
Lindsay, J. M.....Austin
Clingman, Frank.....Austin
Shaw, O. W.....Austin
Hendryx, S. V. R.....Austin
Holmberg, J. E.....Avoca
Hartung, Jos.....Avoca
Nelson, Chas.....Avon
Johnson, Ingebret.....Atwater
Gould, E. N.....Atwater
Olson, W. V.....Atwater
Johnson, E. J.....Atwater
Bitzen, Aug.....Atwater
Peterson, S. E.....Atwater
Senachal, D. F.....Atwater
Peterson, F. C.....Atwater
Alm, John.....Ayr, N. D.
Lien, Peter.....Audubon
Jenson, H. A.....Audubon
Boyer, Ole R.....Audubon
Jensen, M. H.....Audubon
Scullin, Arthur.....Austin
Meyer, J. H.....Austin
Glader, S. B.....Atwater
Miller, J. W.....Atwater
Strong, J. H.....Atwater
Soder, Robt. E.....Atwater
Peterson, E. W.....Atwater
Kintz, John.....Atwater
Bollmann, Paul.....Balaton
Lamb, Chas.....Baker
Hjermstad, Morten.....Balaton
Titus, S. L.....Bald Eagle Lake
Moore, A. M.....Balaton
Rockman, N. M.....Barron, Wis.
Brown, A. D.....Baraboo, Wis.
Miller, E. J. D.....Barlow, N. D.
Baumgardner, B. F.....Barnesville
Forbes, E.....Barlow, N. D.
Bjerke, E. E.....Barrett
Newmal, E. J.....Barrett
Setterland, N. P.....Barrett
Bollum, H. J.....Barrett
Leraas, O. J.....Barrett
Hubred, O. M.....Barrett
Peterson, Peot.....Barrett
Prytz, Frank.....Barrett
Isaacson, And.....Barrett
Lund, A. T.....Barrett
Gustofson, C. G.....Barrett
Graham, M. H.....Barnum
Harper, Mrs. Emma B.....Barnum
Eckley, J. L.....Barnum
Patterson, H. R.....Barnum
Felgen, Michael.....Barnum
Conner, John D.....Barnum
Benhardness, Martin.....Battle Lake
Luhning, H. D.....Battle Lake
Putnam, S. T.....Battle Lake
Keith, John A.....Bx. 98, Bayfield, Wis.
Larson, Chas. G. Bx. 159, Bayfield, Wis.
Moklev, Martin S.....Battle Lake
Wilkinson, A. H.....Bayfield, Wis.
Hany, F. N.....Bayfield, Wis.
Kockmann, J.....Belgrade
Pederson, P. A.....Beardsley
Bredvold, L. L.....Belview
Kibler, Chas.....Bellingham
Gregory, Wm. T.....Beach, N. D.
Street, Chas.....Beltrami
Gimmestad, O.....Belview
Hegdahl, H. B.....Belview
Taylor, L. A.....Belle Plaine
Street, Wm.....Beltrami
Nelson, Jacob.....Beltrami
Westergard, P. J.....Belgrade
Adsit, Dick.....Belview
Buetow, Paul.....Belle Plaine
Riehl, Frank.....Belle Plaine
Sandvig, C. E.....Belgrade
Nenbeiser, Jos.....Belle Plaine
Lumberg, J. A.....Belle Plaine
Whittock, F. J.....Belle Plaine
Coleman, A. B.....Bennettville
French, N. S.....Berlin, N. D.
Klebs, J. C., Jr.....Bertha
Livingston, J. W.....Bennettville
Blakely, G. N.....Bertha
Schuster, Ed. W.....Bertha
Hawkins, J. B.....Benson
Snow, C. B.....Bethel
Hanquist, Swan.....Belle Plaine
Johnson, C. A.....Belle Plaine
Schmidt, Jos.....Belle Plaine
Oleson, Geo. W.....Belle Plaine
Chard, Thomas.....Belle Plaine
Kuefler, Anton.....Belgrade
Jefferson, Lucy E.....Bingham Lake
Kennedy, Daniel.....Biscay
Montana Nursery Co.....Billings, Mont.
Durrell, J. J.....Big Fork
Will, O. H.....Bismarck, N. D.
Olson, O. J.....Big Fork
Biltmore Forest School...Biltmore, N. C.
Kenning, C.....Bird Island
Iverson, E. E.....Bingford, N. D.
Ness, H. T.....Bird Island
Murray, D. L.....Blooming Prairie
Bailiff, R. L.....Bloomington
Afdem, M. P.....Blooming Prairie
Meyer, Henry.....Blue Earth
Wold, John K.....Blooming Prairie
Setzer, Philip.....Blooming Prairie
Peterson, T. B.....Blooming Prairie
Jack, Nathan.....Blakely
Pribyl, John.....Blooming Prairie
Pace, J. G.....Blue Earth
Iverson, Nils.....Bloomer, Wis.
Murray, D. L.....Blooming Prairie
Herron, John.....Blooming Prairie
Johnson, Geo.....Blooming Prairie
Rye, T. O.....Blooming Prairie
Warden, D. A.....Borina Center, N. Y.
Thompson, R. K.....Bottineau, N. D.
Murray, G. W.....Bordulac, N. D.
Lian, T. O.....Borup
Fawkes, W. C...Gen. Del., Boise, Idaho
Friberg, Emil.....Boyd
Hiliger, Rev. Aug.....Boyd
Betz, F. A.....Boyd
Arndt, Carl.....Boyd
Crosby, S. P.....Braham
Swenson, Chas.....Braham
Larson, Gust.....R. 3, Braham
Renius, C. S.....Braham
Olander, Frank.....Braham
Morgan, H. L.....Bradley, S. D.
Nelson, Chas. F.....Braham
Thompson, T. A.....Brandon
McClintock, C. E.....Braham
Peterson, A. H.....Brandt, S. D.
Olesen, T. K.....Brewster
Vehe, J. L.....Bristol, S. D
Johnson, Olof.....Bricelyn
Sunsburn, J. H.....Breckenridge
Good, Levi.....Breckenridge
Mangskon, E. H.....Breckenridge
Blatherwick, J. C.....Breckenridge
Miller, C. E.....Breckenridge
Ketchem, C. S. .....Brookpark
Larson, Arne H.....Brookings, S. D.
Buswell, L. A.....Bruno
Palmer, Wm. H.....Brownsdale
Leary, D. J.....Browns Valley
Felling, Rud.....Browns Valley
Eastman, Jos. D.....Browns Valley
Sandvig, H. J.....Brooten
Reil, John H.....Brownton
Herbrandson, O.....Brooten
Rindahl, O. O.....Brooten

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Majerns, Math.....Brooten
O'Dell, W. W.....Brooten
Thorson, Thor.....Brooten
Baalson, H. E.....Brooten
Erickson, Severt.....Brooten
Baalson, A. E.....Brooten
Ellestad, E. O.....Browerville
Thompson, E. A.....Browerville
Johnson, John C.....Brunkelberg
Brown, W. A.....Brownsdale
Paul, J. L.....Browns Valley
Martz, Fred P.....Brunkild, Man.
Elwin, Mrs. John.....Brooklyn, N. Y.
Marsh, P. J.....Buffalo
Westergaard, C.....Buffalo, N. D.
Lowe, M. F.....Buffalo
Helmer, S. O.....Buffalo
Jang, A. E.....Buffalo Lake
Stromberg, E. O.....Buffalo
Elliot, W. J.....Buffalo
Haseman, Henry H.....Butterfield
Fish, Joe.....Butler
Deline, W. F.....Cannon Falls
Tanner, U.....Cannon Falls
Swanson, C. E.....Cannon Falls
Sellset, Albert A.....Canby
Youngberg, C. A.....Cannon Falls
Armitage, C. W.....Canby
Jaspard, J. P.....Caledonia
Wilson, Daniel.....Caledonia, N. D.
Mullen, L.....Campbell
Lewis, Bert.....Caledonia
Murray, Geo. B.....Cando, N. D.
Millard, Frank E.....Canby
Grift, Peter.....Cambridge
Marso, J. P.....Canby
Anderson, Alfred.....Canby
Wattner, A. A.....Canby
Noffsinger, J. W.....Campbell
Olson, L.....Canby
Westfield, Kasper.....Canby
Burtness, H. E.....Caledonia
Smith, Judson.....Campbell
Ware, N. W.....Campbell
Rice, J. C.....Canton
Jassman, H. C.....Canton
Manst, J. H.....Canton
Benson, M.....Cannon Falls
Gergen, G.....Cannon Falls
Johnson, C. R.....Cannon Falls
Tusten, R.....Caledonia
Cutting, Mrs.....Carnegie, Man.
Page, H. A.....Carrington, N. D.
Holt, John E.....Carver
Oldenburg, Henry C.....Carlton
Ohland, C. H.....Carver
Oollip, Fred .....Carver
Skoog, A. L.....Carver
Ratcliff, F. M.....Carlton
Barterud, O. O.....Carrington, N. D.
Brown, Mrs. Chas.....Cavalier, N. D.
Worsley, T. E.....Cascade, Mont.
Noerenberg, Fred..Cascade Springs, S. D.
Marshall, G. E.....Cass Lake
Bartlett, Lester.....Cass Lake
Hawkinson, Arthur.....Center City
Edmunds, H.....Cedar
Oleson, Anton.....Centuria, Wis.
Hicks, Wm. C.....Cedar
Simpson, Joe.....Cedar
Guy, E. E.....Cedar
Lorens, Wm.....Center City
Robinson, Reuben.....Champlin
Patten, H. G.....Charles City, Ia.
Armstrong, H. R.....Chatfield
Pauly, Nic.....Chanhassen
Marsh, F. L.....Champlin
Wartman, Chas.....Chaska
Popple, John.....Chaska
Ottenger, Geo.....Chaska
Richard, David.....Chaska

Sherwood, M. W.....Chatfield
Harning, R. S.....Chatfield
Baubles, D. O.....Chatfield
Fisk, E. D.....Chatfield
Crane, M. H.....Chatfield
Finkel, Henry.....Chaska
Huston, H. A.562 Monadnock, Chicago, Ill.
Schlemmer, A.....Chisago City
Sayre, R..Chicago, Ill., 7205 Jeffery Ave.
Anderson, A.....Bx. 3, Christine, N. D.
Anderson, Alex P.....
.....Chicago, Ill., 5463 Wash. Ave.
Blackmore, Hon. John.....
.....Christ Church, New Zealand
Daubenberger, E. V.....Chokio
Geiger, Wm. C.....
....Chicago, Ill., 57 W. Van Buren St.
Peterson, Albert.....Chisago City
Johnson, Aug.....Chisago City
Peterson, E. L.....Chisago City
Dahl, F. A.....Chisago City
Palmquist, C. G.....Chisago City
Anderson, E. U.....Chisago City
Moody, John E.....Chisago City
Schoberg, Axel.....Chisago City
Peterson, Chas. P.....R. 1, Chisago City
Morrison, A. E.....Chisago City
Lyden, And.....Chisago City
Lundeen, Theo. F.....Chisago City
Carlson, F. O.....Chisago City
Noren, Henry E.....Chisago City
Nelson, O. M.....
.....Chicago, Ill., 348 W. Erie St.
Wilkinson, Mrs. C. B.....
.....Cheyenne Wells, Colo.
Murphy, C. H.....Caledonia
Callihan, Wm.....Caledonia
Menge, C. D.....Caledonia
Scherzen, Otto.....Calloway
Scott, P. C.....Canby
Peterson, Ed. O.....Canby
Nelson, M. S.....Canby
Hanson, P. M.....Canby
Peterson, R. Waldo.....Canby
Throndson, Theo.....Canby
Public School.....Canby
Monsel, Henry .....Canby
Nold, Geo.....Cambridge
Gafston, C. O.....Cambridge
Blegen, Sandy.....Canton
Vettel, Geo. M.....Caledonia, N. D.
Leary, Daniel.....Caledonia
Vangen, Peter O.....Climax
Bolin, J. A.....Clarissa
Silver, J. N.....Clarkfield
Jackson, Peter.....Cloquet
Johnson, Gust J.....Clarissa
Fritze, Leonhard.....Claremont
Doepping, Wm.....Claremont
Anderson, Alfred.....Clara City
Leath, Fred.....Cleveland
Wells, G. H.....Clearwater
Whitney, C. B.....Clearwater
Studley, G. W.....Cleveland
Berg, I. I.....Climax
Hintz, Geo.....Claremont
Johnson, Dr. A. E.....Cloquet
Gulseth, Martin.....Climax
Sogould, L.....Clements
Olson, A. K.....Clinton
Aannes, N. J.....Clarkfield
Hellzen, C. A.....Clarkfield
Hornby, H. C.....Cloquet
Case, Walter.....Cloquet
Larson, Anton E.....Cloquet
Johnson, Aug.....Cloquet
Manley, W. Chas.....Clear Lake
Neudecker, J. J.....Clements
Dahlman, L. A.....Clarissa
Hong, Knut.....Clarissa
Carlson, John A.....Clarissa
Lundquist, J. A.....Clarissa

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Johnson, Alf. F.....Clarissa
Denniston, A. C.....Clarissa
Godwin, A. J.....Clarissa
Holmquist, Arthur.....Clarissa
Day, L. E.....Clinton Falls
Newhall, A. O.....Clinton Falls
Masche, Wm. F.....Clinton Falls
Jones, P. P.....Clearwater
Kathmann, H. A.....Clearwater
Koppang, Olaf.....Climax
Floreen, Swan.....Constance
Katzner, Rev. J. B.....Collegeville
Pedersen, And. W.....Comfrey
Zirnstein, O. E.....Comstock
Dybvig, Nels H.....Colton, S. D.
Friedrickson, S. C.....Cobden
Gabrielson, C. G.....Comfrey
Miller, H. J.....Cologne
Stifter, Frank.....Cokato
Flint, H. R.....Coleraine
Richardson, L. P.....Comfrey
Gilmore, Mrs. Guy.....Comfrey
Harrison, M. B.....Comfrey
Raschka, W.....Comfrey
Titrud, Albert.....Cokato
Melcher, Edward.....Cologne
Johnson, F. W.....Cologne
Lundren, Lewis.....Cologne
De Long, T. R.....Collins, N. D.
Thompson, R. C.....Comstock, Wis.
Wehlitz, W. F.....Constance
Dols, L. J.....Cologne
Ball, Geo. J.....Cologne
Flint, H. R.....Coleraine
Streukens, John.....Cologne
Brown, Dr. A. E.....Conde, S. D.
Twitchell, W. G.....Correll
Walker, Chas.....Cook
Torgerson, Theo.....Coon Valley, Wis.
Schilling, E. A.....Cottonwood
Buro, John.....Cook
Lende, T. A.....Cottonwood
Bonde, Edwin.....Cottonwood
Upton, J. H.....Cresco, Ia.
Stephens, Ezra F.....Crete, Neb.
Robertson, Prof. Wm.....Crookston
Munch, Mrs. Marie.....Crookston
Krogman, Henry.....Crookston
Robinson, S. A.....Crozet, Va.
Lane, David.....Crystal, N. D.
Rude, T. H....Crookston, 104 St. Paul St.
Hetler, J. F.....Crookston
Lotta, Walter.....Crookston
Valker, Emil.....R. 1, Crookston
Erlandson, Robt.....Crookston
Robertson, Mrs. Eva.....Crookston
Fossbakken, Chris.....
.....Crookston, care School of Agri.
Nelson, Olof.....Crookston
Senum, Otto.....Crookston
McIntyre, E. E.....Crookston
Woodruff, Thesa.....Crookston
Powers, H. H.....Crookston
Harrington, L. P.....Crookston
Penney, John.....Cushing, Wis.
Ruston, J. W.....Cypress River, Man.
Richmond, Gordon...Cypress River, Man.
Grose, Fred S.....Danube
Thormodson, N. E.....Dalton
Johnson, John.....Danube
Hendrickson, O. C.....Dallas, S. D.
Osborn, John.....Dassel
Stowe, John M.....Davidson, Sask.
Skotterud, E. O.....Dawson
Alexander, Alfred.....Dawson
Bergman, Gus.....Dawson
Dawson, Ed. H..Daysland, Alberta, Can.
Engstrand, John.....Dawson
Ewing, A. W.....Dawson
Hoyum, J. O.....Dawson
Berseth, Wm.....Dawson
Hovland, John.....Dawson

Hill, Ben.....Dawson
Stenson, Nels.....Dawson
Barton, Henry.....Davidson, Sask.
Mattson, L. E.....Dassel
Sunwall, Chas.....Dassel
Bredeson, John.....Dassel
Braberg, A. J.....Dassel
Foss, F. F.....Dassel
Forsen, Aug.....Dassel
Nelson, John.....Dassel
Olson, Olof.....Dassel
Carlsted, M.....Dassel
Johnson, Ernest.....Dassel
Smith, Peter.....Dassel
Bartust, John.....Dassel
Johnson, K.....Dassel
Benson, Victor.....Dassel
Arnleend, A. E.....Dassel
Nelson, John J.....Dassel
Anderson, N. M.....Dassel
Hanson, Aug.....Dassel
Larson, And.....Dassel
Nelson, Gust.....Dassel
Hanson, Simon J.....Dawson
Sell, Chas.....Delano
Davenport, W. R.....Dennison
Charlsson, S.....Dennison
Ball, C. E.....Delano
Torgrimson, C. E.....Deering, N. D.
Nelson, Oscar W.....Deerwood
Zempel, R. L.....Deer River
Hart, W. W.....Delavan
Brunkow, Chas. A.....Delano
Lykken, C. T.....Dennison
Noble, A. S.....Dent
Kornick, Peter.....Delano
Kornick, Frank.....Delano
Scofield, Dr. Fred L.....Dennison
Kre, Albert.....Dennison
Loop, Leeman.....Dent
Hall, Jackson.....Dent
Bluhm, Otto.....Deer Creek
Voge, C. J.....Deer Creek
Ingwold, Gust.....Deer Creek
Voge, Henry.....Deer Creek
Chapman, Cyrus.....Delano
Burrows, Walter.....Delano
Lores, Dr. B. V.....Delano
Czanstkowski, Albert.....Delano
Eppel, Chas.....Delano
Parker, Chas. E.....Delano
Schwerin, Henry.....Delano
Franks, Mike.....Delano
Noble, Byron.....Dent
Lindow, A. F.....De Graff
Schlegel, Jos.....De Graff
Rennacker, C. J.....Detroit
Brown, Geo. H.....Detroit
McCoy, Mike.....Dexter
Schottler, Dr. G. J.....Dexter
A. H. Davison.....
.....State House, Des Moines, Iowa.
Edlund, E.....Detroit
Day, F. S.....Detroit
Maher, John W.....Devils Lake, N. D.
Hole, Henry.....Devils Lake, N. D.
Veek, Carl.....Dennison
Happin, W. R.....Dexter
Maher, Harold.....Devils Lake, N. D.
Whipple, Howard.....Devils Lake, N. D.
Prosser, Frank H.....Devils Lake, N. D.
Locke, A. W.....Dodge Center
Jensen, J. P.....R. 1, Dodge Center
Meyers Bros.....Donnelly
Carlier, Aug.....Dodge Center
Svendsen, Christian.....Dodge Center
Dalos, Martin.....Dogden, N. D.
Brandt, A. J.....Donnelly
Wells, K. R.....Dodge Center
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Cady, L. C.....Dodge Center
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Robbins, Fred.....Dovray
Hager, Ole.....Dovray
Luhman, John.....Dover
Palgin, Lawrence.....Dresbach
Grimm, Ben.....707 E. 3d, Duluth
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Jones, A. C.....Duluth
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Helm, H. C.....Duluth
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Rupley, Geo.....Duluth
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Hallgren, Aug.....Eagle Bend
Coulter, Geo.....East Grand Forks
Bushea, Lewis.....East Grand Forks
Jacobson, J.....R. 2, East Grand Forks
Johnson, N. O.....East Grand Forks
Jedlicka, Henry.....Eagle Bend
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Bode, A. J.....Echo
Pfeiffer, Rev. N. J. Al.....Eden Valley
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Harrison, J. R.....Eden Prairie
Kruger, Mrs. A. C.....Eden Prairie
White, L. J.....Eden Prairie
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Thompson, O. A.....Edgeley, N. D.
Runals, Maj. D. E.....Edgerton
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Brodale, And.....Effington, S. D.
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Wiese, Emil.....Elbow Lake
Kolle, A. S.....Elbow Lake
Torgers, R. J.....Elbow Lake
Christenson, C. A.....Elbow Lake
Anderson, Nels.....Elbow Lake
Laustuen, P. O.....Elbow Lake
Waessner, Wm.....Elbow Lake
Anderson, B. E.....Elbow Lake
Porter, H. W.....Eldridge, N. D.
Nellis, Conrad A.....Elk River
Brown, J. M.....Elk River
Sand, Ole O.....Elbow Lake
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Kiehn, Wm.....Fairfax
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Wachlin, Wm.....Faribault
Rowell, L.....Farmington
Akin, D. F.....Farmington
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Craven, J. W.....Faribault
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Opheim, And.....Fertile
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Roragen, E. P.....Fertile
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Nelson, Hans.....Fergus Falls
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Glyer, Alf.....Forest Lake
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Early, Geo.....Fountain
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Olmlee, O. J.....Foreston
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Stien, J. G.....Fossum
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Christenson, Wallie.....Forest Lake
Swanson, J. J.....Forest Lake
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Enerson, T.....Forest Lake
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Wilwerding, A.....Freeport
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Webb, H. L.....Glyndon
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Enstad, L. O.....Granite Falls
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Tjoswold, S. O.....Granite Falls
Midgarden, Albert.....Grafton, N. D.
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Markerson, H. H.....Grasston
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Husting, L. P.....Hastings
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Crosby, F. M.....Hastings
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Gergen, N. B.....Hastings
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Miller, A. M.....Harmony
Glatzmaier, Rev. Conrad.....Hastings
Fick, Chas.....Harmony
Johnson, Hugo.....Hasty
Sullivan, G. S.....Hasty
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Dockstader, Dr. A. C.....Hastings
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Leavitt, T. B.....Hastings
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Koehler, D.....Hector
Hammer, M. E.....Helberg
Ulrich, Wm.....Hector
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Thompson, R. H.....Hendrum
Tengsdahl, Carl.....Hendrum
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Hagen, O. J.....Hendrum
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Edmonds, Chas.....Hillsboro, N. D.
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Toay, Michael.....Jamestown, N. D.
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Breentson, S.....Janesville
Savage, Thos.....Janesville
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Geis, Michael.....Jordan
Englund, Oscar.....Jordan
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Hanson, J. G.....Kasson
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Boutwell, E. E.....Kasota
Nelson, H. C.....Karlstad
Johnson, N. C.....Kasota
Larsen, J. L.....Kasson
Breever, H. E.....Kasson
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Judd, Oscar.....Kellogg
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Erlandson, Carl.....Kennedy
Jamison, Jas.....Kennedy
Olson, Aug. P.....Kennedy
Dokken, C. O.....Kenyon
Heideman, Fred.....Kenmare, N. D.
Pearson, Swan.....Kennedy
Haatvedt, And.....Kensington
Stark, Jos.....Kensington
Stark, Amos.....Kensington
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Anderson, Emil.....Kensington
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Johnson, J. E.....Kensington
Lund, C. O.....Kensington
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Anderson, Oscar.....Kennedy
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Mortinson, Hogan.....Kennedy
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Manney, Mrs. Rose.....Kerkhoven
Halverson, Peat.....Kerkhoven
McGeough, Bernard.....Kilkenny
Stanley, D. B.....Kimball
Kunkel, Jos. J.....Kimball
Heid, J. B.....Kimball
Harding, C. E.....Kinbrae
Nelson, Victor.....Kinbrae
Winslow, B. H.....Kimball
Hershay, Ed.....Kenyon
Firmesgaard, C. K.....Kenyon
Swanson, S. K.....Kenyon
Finseth, K. O.....Kenyon
Bratvold, A. O.....Kenyon
Knutson, K. N.....Kenyon
Voxland, Herman O.....Kenyon
Finseth, Arthur.....Kenyon
Stacy, A. B.....Kenyon
Bjugan, Nels L.....Kenyon
Lathrum, Henry.....Kenyon
Lindberg, Louis N.....Kennedy
Forslind, Geo.....Kennedy
Palmberg, John M.....Kennedy
Hoover, J. L.....Kensal, N. D.
Carlson, John.....Kennedy
Gustafson, John.....Kennedy
Melgaard, Lauritz.....Kennedy
Stai, Peter.....Kerkhoven
Steen, John.....Knox, N. D.
Olney, Will.....Knox, N. D.
Hobart, L. R.....Lake Crystal
Barney, M. J.....Lake Crystal
O'Neill, Mrs. E. O.....Lambert
Anderson, Chas.....Bx. 702, Lake City

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Miller, Warren.....Lake Benton
Hess, Jacob.....Lamberton
Kennedy, John.....Lake City
Mills, L. D.....Lake Crystal
Webster, D. C.....La Crescent
Beebe, H. U.....Lake City
Smith, T. C.....Lakeville
Jonson, C. J.....Lafayette
Smith, E. A.....Lake City
Irwin, Mrs. D. O.....Lake City
Schain, O. P.....Lamberton
Ingebretson, Lewis.....Lake Park
Turnbull, John.....La Crescent
Roberson, Albert.....Lake City
Scott, Wm.....Lake Wilson
Swenson, Gilbert.....Lamberton
Malmberg, E. W.....Lafayette
Krall, John.....Lake Benton
Peterson, Jos.....Lake Crystal
Wakefield, W., M. D.....Lake Benton
Swanstrom, Emil.....Lake Park
Swanstrom, Nels.....Lake Park
Miller, S. O.....Lakeville
Matter, J. P.....Lamberton
Kenyon, J. M.....Lamberton
Stenerson, S. A.....Lakeville
Johnson, P. G., 625 N. High St. Lake City
Schroeder, Chas.....Lake Benton
Eastgate, J. E.....Larimore, N. D.
Mathews, Mrs. Jas. H....Larimore, N. D.
Hageman, J. W.....Langdon
Pierce, J. Dexter.....Larimore, N. D.
Boelk, Ferd.....Lansing
Willette, Jas.....La Crescent
Nelson, Edward O.....Lanesboro
Peterson, E. O.....Lanesboro
Peterson, Ole L.....Lanesboro
Neary, Chas.....Lakeville
Malorey, J. H.....Lakeville
Hawley, Annie M.....Lanesboro
Soderstrom, Charley.....Larimore, N. D.
Sullon, W. D.....Latona
Davies, D. E.....Lake Crystal
Moris, Mrs. Frank.....Lake Elmo
Wagnild, O. J.....Lakefield
Day, W. S.....Lakeland
Nickelson Bros.....Lake Park
Johnson, Rev. J. H.....Lake Park
Olson, Theo.....Lake Park
Horn, J. T.....Lake Park
Olson, Nels.....Lake Park
Davis, O. W.....Lake Park
Hanson, Thomas Ville.....Lake Park
Johnson, Chris U.....Lake Park
Bartnes, Robert.....Lake Park
Erickson, M. O.....Lake Park
Johnson, Herman.....Lake Park
Olson, Alfred.....Lake Park
Melby, Jens H.....Lake Park
Johnson, L. H.....Lake Park
Bjornstad, M. J.....Lake Park
Cleator, Frederic W., Leavenworth, Wash.
Soner, H. S.....Lake Park
Wilson, O. J.....Lake Park
Thorgerson, A. K.....Lake Park
Lorentzen, J. O.....Lake Park
Hanson, Henry C.....Lake Park
Johnson, S. A.....Lake Park
Burland, John.....Lake Park
Norby, J. J.....Lake Park
Olson, Geo. P.....Lake Park
Boynton, G. W.....La Crescent
Sarff, M. L.....Lakewood
Anderson, Clarence.....R. 2, Lake City
Von Arx, A. J.....La Crescent
Julson, J. O.....Lake Preston, S. D.
St. John, A. M.....Lakefield
Mallery, John W.....Lakeville
Carlson, Wm. A.....Lake City
Carlisle, Frank.....Lake Benton
Lyndgaard, Jorgen.....Lake Benton
Hansen, Nels..Bx. 13, R. 2, Lake Benton

Knudsen, K. K.....Lake Benton
Anderson, Knute.....Lake Benton
McTaggart, D.....Lamberton
Redding, L.....Lamberton
Newdall, Chas.....Lamberton
Winship, P. D.....Lake Park
Vollenweider, Henry.....La Crescent
Hedman, L. L.....Lamberton
Anderson, Henry.....Lake Wilson
Swenson, Adolph.....Lake Park
Prosser, L. W.....Le Roy
Eddy, H. D.....Le Sueur Center
McCabe, B. S.....Le Sueur Center
Bowers, Merrill.....Le Roy
Watt, John.....Leonard, N. D.
Whipps, L. L.....Le Sueur Center
Harrison, H. W.....Le Roy
Bluhm, A. G.....Le Sueur
Tomlinson, W. H.....Le Sueur
Rowell, H. H. S...Bx. 228, Lewiston, Ida.
Sucker, Adolph.....Lewisville
Piper, Wm.....Leonard, N. D.
Prescot, R.....Le Roy
Hauge, John.....Le Roy
Hunt, O. W.....Lewiston
Litcher, J. J.....Lewiston
Sellwagon, Wm.....Lewiston
Nelson, C. G.....Lindstrom
Jensen, T. P.....Little Falls
Eix, Gustav.....Little Falls
Williams, M. M.....Little Falls
Borgstrom, R.....Lincoln
Martin, J. K.....Little Falls
Kog, G. J.....Little Falls
Johnson, O. H.....Little Falls
Shubert, Christ.....Little Falls
Bigelka, Otto.....Little Falls
Engstrom, C. F.....Little Falls
Grand, W. H.....Little Falls
York, O. H.....Little Falls
Lindstan, John A. J.....Lindstrom
Carlson, C. O.....Lindstrom
Mix, H. P.....Lidgerwood, N. D.
Becker, Geo.....Litchfield
Walters, Alex.....Litchfield
Casey, Thom.....Litchfield
March, C. H.....Litchfield
Strobect, F. E.....Litchfield
Casey, Jos.....Litchfield
Evenson, Nels O.....Litchfield
Keiver, W. L.....Little Fork
Drum, Thos. L.....Little Falls
Mullen, John T.....Litchfield
Gustavson, Alfred.....Long Prairie
Lowe, L. H.....Long Prairie
Johnson, A. J.....Long Prairie
French, Mrs. A. A.....Loveburn, Sask.
Legerd, Michael.....London
Malakonsky, Otto.....Lockhart
Brooks, W. W.....Long Prairie
Loegering, Aug.....Long Prairie
Hickerson, W. N.....Long Prairie
Moberg, Aron.....Lowry
Stewart, M. W.....London
Nystrom, J.....Long Lake
Butterfield, F. J.....Long Lake
Butterfield, Mrs. F. J.....Long Lake
Larson, L. U.....Lowry
Bemis, E. H.....Long Prairie
Coss, L. E.....Luverne
Innes, J. C.....Luverne
Blakestad, L.....Lyle
Thompson, F. B.....Lyle
Madrea, F. W.....Lyle
Grimes, Geo. S...415 Bank of Com., Mpls.
Collins, P. V.....N. W. Agri., Mpls.
Kennedy, Dr. Jayne.713 Don. Bldg., Mpls.
Kline, W. L.....2305 W. 21st St., Mpls.
Powers, Frank W.....
.....2816 Garfield Ave., Mpls.
Lorence, Jos.....Sta. F., R. 2, Mpls.

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Hawkins, Jasper S.....
.....1523 Fremont Ave., N., Mpls.
Newton, C. L....2832 Chowan Ave., Mpls.
Fulton, C. K.....
..Care of Fulton & Libbey Co., Mpls.
Grant, Colfax....513 Bank of Com., Mpls.
Perkins, W. F.....Camden Place, Mpls.
Stevens, F. W....1712 E. Lake St., Mpls.
Krebs, Benj.....
....2412 Jefferson St. N. E. Mpls.
Meyer, E.....3800 Bryant S., Mpls.
Frink, Lucius.....
.....527 Guaranty Bldg., Mpls.
Harvey, C. M....3237 Holmes Ave., Mpls.
Kidder, F. B.....4915 40th Ave. S., Mpls.
Jorris, Dr. F. E....Lindley Blk., Mpls.
Washburn, Stanley.....Fair Oaks, Mpls.
Challman, S. A. 1107 7th St. S. E., Mpls.
Leavitt, Miss Clara.....
.....2015 James Ave. S., Mpls.
Crounse, A.....417 Met. Bldg., Mpls.
Briggs, E. M....191 E. Island Ave., Mpls.
Gaines, A. D..609 Wash. Ave. S. E., Mpls.
Butler, Miss Eloise.....
.....2628 Clinton Ave., Mpls.
Anderson, Miss Deborah.....
.....1520 S. 9th St., Mpls.
Day, Nelson.....Sta. F., R. 3, Mpls.
Klinkenberg, C. R., Sta. F., R. 3, Mpls.
Erickson, P. W.....334 E. 18th, Mpls.
Hodge, Mrs. H. F..3032 3d Ave. S., Mpls.
Odell, Clinton M....2839 James S., Mpls.
Ludlum, John....2928 S. Aldrich, Mpls.
Ford, Walter H....2824 S. Irving, Mpls.
Benton, Henry B..Sec. Bk. Bldg., Mpls.
Derickson, G. P....1760 Hen. Ave., Mpls.
Abrams, Mrs. S. O..2903 W. 43rd, Mpls.
Sampson, Chas. W.....Mpls.
Holtzermann, J. D..417 Cedar Ave., Mpls.
Lee, Prof. Thos. G..University of Minn.
Nelson, G. Edward..Sta. F., R. 3, Mpls.
Comstock, E. F....119 N. 2nd St., Mpls.
Shevlin, Thos. H.....Mpls.
Smith, C. A.....Mpls.
Kilpatrick, W. M.....Sta. F., Mpls.
Haas, Dr. L. J..410 Pillsbury Bldg., Mpls.
Webster, Prof. W. F.....
.....1025 S. E. 5th St., Mpls.
Wintersteen, C. B.....
.....3953 11th Ave. S., Mpls.
Merrill, A. Y.....
....313 Lumber Exchange, Mpls.
Higgins, A.....Sta. F., R. 2, Mpls.
Huss, Geo. M..35 Franklin Heights, Mpls.
Petit, P. J.....3438 Pleasant Ave., Mpls.
Crockett, E. D., 2611 Stevens Ave., Mpls.
Bartlett, F. A., 527 Guaranty Bldg, Mpls.
Fuller, E. D....3417 Longfellow S., Mpls.
Stockwell, S. A., 304 Andrus Bldg., Mpls.
Ewald, Julius.....212 W. 26th St., Mpls.
Miller, E. B.....Sta. F. R. 1, Mpls.
Cummings, Geo. W..Sta. F., R. 3, Mpls.
Boardman, F. H., 537 Andrus Bldg., Mpls.
White, Miss Emma V.....
.....3010 Aldrich S., Mpls.
Henneker, W. S.....
.....3113 Pleasant Ave., Mpls.
Whetstone, Dr. Mary S.....
.....608 Nic. Ave., Mpls.
Huestis, Dr. O. M.....
.....400 Central Ave., Mpls.
Sprague, Mrs. L. E. P.....
.....509 8th Ave. S. E., Mpls.
Longfellow, L....1808 Vine Place, Mpls.
Nelson, M. O.....743 Lmbr. Ex., Mpls.
Radabaugh, N. C..2526 32 Ave. S., Mpls.
Nutter, F. H.....710 Sykes Blk., Mpls.
Owen, S. M.....830 Hen. Ave., Mpls.
Pond, E. R.....R. 1, Mpls.

Bigelow, Mrs. F. W.....
....4323 Dupont Ave. S., Mpls.
Dow, T. J.....3117 Grand Ave., Mpls.
Bothman, C. H.....
....2124 S. Dupont Ave., Mpls.
Wirth, Theo.....3935 Grand Ave., Mpls.
Winkley, F. C.....
.....Loan & Trust Bldg., Mpls.
Rogers, C. R....2630 Pleasant Ave., Mpls.
Fortin, Geo. E....813 N. Y. Life, Mpls.
Ramsden, Chas. H.....
.....911 Phoenix Bldg., Mpls.
Hone, Miss Daisy.....
.....1034 15th Ave. S. E., Mpls.
Nydahl, J. L.....915 20th Ave. S., Mpls.
Van Fleet, C. L..2721 9th Ave. S., Mpls.
Ellingson, S.....Sta. F., R. 4, Mpls.
Haynes, Prof. A. E.....
.....703 St. Anthony Boul, Mpls.
Blaker, C. D.....Sta. F., Mpls.
Rankin, Prof. A. W.....
.....916 5th St. S. E., Mpls.
Leonard, Dr. L. D.....
.....Donaldson Bldg., Mpls.
Baker, H. F.....
..4629 Lake Harriet Boul, Mpls.
McDonald, Mrs. M.....
.....2202 Blaisdell Ave., Mpls.
Covell, Mrs. Janette B.....
.....220 Wash. Ave. N., Mpls.
Russell, Wm....4810 38th Ave. S., Mpls.
Russell, Mrs. Wm..4810 38 Ave. S., Mpls.
Sinclair, Mrs. Geo.....
.....3045 Emerson S., Mpls.
McCabe, Mrs. M.....R. 1, Sta. F., Mpls.
Ellison, F. H.....Sta. F., R. 2, Mpls.
Jensen, Adolph..3317 17th Ave. S., Mpls.
Simpson, Hon. David, Court House, Mpls.
Tillotson, Mrs. H. B.....
.....1320 5th St. S. E., Mpls.
Ludwig, Mrs. A. W.....
.....1801 Humboldt S., Mpls.
Moran, Father.....
.....Holy Rosary Church, Mpls.
Bell, F. W.....2532 Nic. Ave., Mpls.
Chatfield, Mrs. E. C.....
.....613 Fulton St. S. E., Mpls.
Hawkins, John .....Bx. 495, Mpls.
Chamberlain, Mrs. L. M.....
.....Sta. F., R. 3, Mpls.
Fobes, E. J.....Carrier 5, Mpls.
Aschenbeck, J. H..731 4th Ave. N., Mpls.
Biron, Robt. H.....Court House, Mpls.
Holmes, J. L..Pittsburg Coal Co., Mpls.
Cuzner, E. A.....
13th and Univ. Ave. S. E., Mpls.
Warren, Geo. H.....
.....3443 S. Irving, Mpls.
Ford, F. H....3121 Portland Ave., Mpls.
Simpson, S. R....3212 22d Ave. S., Mpls.
Bull, J. Harry.....Sta. F., R. 2, Mpls.
Anderson, V. C.....Sta. F., R. 3, Mpls.
Mareck, Titus.....315 1st Ave. S., Mpls.
Lindholm, C. G....4228 Dupont N., Mpls.
Burnett, W. J.....200 N. 3rd St., Mpls.
Kierski, S.....4740 Upton S., Mpls.
Loveland, T. A.....
.....503 Oneida Bldg., Mpls.
Coe, W. T.....410 N. Y. Life, Mpls.
Walker, T. B.....8th St. & Hen., Mpls.
Smith, E. K.....213 Phoenix, Mpls.
Derickson, G. P...1760 Henn. Ave., Mpls.
Williams, Chas. G.....
.....P. O. Registry Div., Mpls.
Hardy, N. C.....415 N. Y. Life, Mpls.
Tennant, Mrs. G. H., 422 6th S. E., Mpls.
Pabody, E. F.....2530 Dupont S., Mpls.
Jalley, W. J.....2809 Irving S., Mpls.
Lindberg, John..5330 Penn Ave. S., Mpls.
Hawkins, Mrs. Alice M.....
.....1523 Fremont Ave. N., Mpls.

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Ruedlinger, C. N., 2924 Aldrich S., Mpls.
Briggs, O. P..730 Met. Life Bldg., Mpls.
Pineo, W. B....507 Pillsbury Bldg., Mpls.
Malmsten, F. W.....
.....2117 Western Ave., Mpls.
Thompson, F. S.,234 Sec. Bk. Bldg., Mpls.
Giebels, Wm.....Bx. 85, R. 4, Mpls.
Moot, Mrs. A. T..3723 W. 44th St., Mpls.
Bofferding, W. H..1423 N. Emerson, Mpls
Lindsay, F. F....25 Seymour S. E., Mpls.
Peterson, P.....2629 Lyndale N., Mpls.
Long, F. B.....830 Henn. Ave., Mpls.
Thomsen, Th. I.....
.....403 Evanston Bldg., Mpls.
The Salzer Lumber Co.....
....2400 Washington Ave., Mpls.
Lovold, E. J.....4125 31 Ave. S., Mpls.
Emmans, Neh. H....1736 James S.,Mpls.
Northam, Chas. H....Lyndale Sta., Mpls.
Leavenworth, Prof. F. P.....
.....1628 4th S. E., Mpls.
Rohan, Mrs. M. A..1004 Nic. Ave., Mpls.
Smith, Hon. John Day..Courthouse, Mpls.
Kaer, N. C.....3856 36 Ave. S., Mpls.
Mpls. Public Library.....Mpls.
Hendrickson, Prof. H. N.....
.....713 21st Ave. S., Mpls.
Odell, Mrs. Rob. R..2836 Irving S., Mpls.
Fairfax, Mrs. J. F.....
.....2636 Humboldt S., Mpls.
Peterson, H. P.....
.....Bx. 2, Columbia Hts., Mpls.
Miner, J. E.....3022 Dupont S., Mpls.
Farmer, E. A.....R. 2, Mpls.
Potter, A. H.....
Care D. C. Bell Inv. Co., Sec. Bg. Mpls.
Baxter, Hector....4200 Park Boul, Mpls.
Rhodes, J. E...1102 Lumber Exch., Mpls.
Hopper, S. T..1901 22d Ave. N. E., Mpls.
Tucker, John S..Auditorium Bldg., Mpls.
Patten, N. B....303 Central Ave., Mpls.
Chamberlain, Mrs. W. O.....
.....3352 Irving S., Mpls.
Holt, Mrs. H..3708 Upton Ave. S., Mpls.
Doudna, J. M.....2517 W. 52 St., Mpls.
Huntington, H.....Mananah
Kuhn, J. A.....Magnolia
Myten, H.....Mabel
Babcock, D. A.....Madelia
Veigel, A. L.....R. 8, Mankato
Knoff, F. B.....Madison Lake
Swearengen, Geo. T.....Madison Lake
Ash, Joseph.....Madison Lake
Wildes, Frank.....Madison Lake
Bush, C. E.....Madison Lake
Mather, J. S.....Madelia
Ranchman, Frank.....Mahtowa
Nelson, Nell.....'Florist', Mankato
Norby, A.....Madison, S. D.
Bisbee, John.....Madelia
Norby, A.....Madison, S. D.
Parker, M.....Manly, Ia.
True, Fred, O.....Mankato
Lumburg, Fred.....Mapleton
Bergh, M. P.....Madison
Pond, I. W.....Madelia
Vandergon, D. D.....Maple Lake
McCullough, Francis.....Maple Plain
Hendrickson, Frank.....Malcolm
Chandonnet, Z. L.....Mahnomen
Hogestande, Erik.....Madelia
McLaughlin, W. W.....Madelia
Ohm, F. H.....Mapleton
Pettis, Chas.....Madelia
Sprague, Ed.....Madelia
McCarty, Ed.....Madelia
Sprague, Clifford.....Madelia
Davis, O. H.....Madelia
Devine, Mrs. Frances M., Mapleton, N. D.

Noehn, Adolph.....Madison Lake
Wilder, Mark L.....Mankato
Cramer, Fred.....Mapleton
Wishart, J. N.....Mapleton
Smith, W. H.....Bx. 150, Madison
Butler, Gilbert.....Mabel
Domrese, F. G.....Magnolia
Kolbert, John.....Bx. 508, Mankato
Strader, W. M.....Mankato
Orton, C. J.....Marietta
Pfister, J. M.....Marietta
Marks, F. C.....Marshall
Wasson, F. D.....Marshall
Young, A. P.....Marine Mills
Ecklund, Bernie.....Marine Mills
Yates, Isaac.....Madelia
Wiegel, H. A.....Magnolia
Adams, R. H.....Magnolia
Nelson, N. H.....Madison
Schmidt, Edward.....Mankato
McCurdy, J. B. K.....Madelia
Jacobson, P. G.....Madison
Scherer, Oscar A.....Mankato
Rockwood, Ell.....Madelia
Shurb, C. A.....Madison
Barclay, J. M.....Madison Lake
Fryer, W. E.....Mantorville
Peterson, Oscar.....Maple Plain
Break, L. E.....Maple Plain
Godell, C. A.....Bx. 51, R. 7, Mankato
McCarty, Miss Esther.....Madelia
McConnell, W. W. P.....Mankato
Minsaas, E. O.....Maynard
Nelson, A. P.....Maynard
Thorpe, L. S.....Mayville, N. D.
Burns, P. P.....Mayer
Larson, L. W.....Maynard
Hoverstad, A. T.....Maynard
Johnson, B.....Maynard
Victor, Nimrod.....Maynard
Loe, S. O.....Maynard
Bussee, H. F.....Merriam Park
Giesman, Miss Rosa B....Merriam Park
Tousignant, D.....Mendota
Woeste, Victor.....Melrose
Dehrer, Henry.....Mendota
Krause, Mrs. Chas.....Merriam Park
Gantzer, Mrs. Daniel.....Merriam Park
Reinhard, C. S.....Medford
Milne, H. A.....Meckinock, N. D.
Chaffee, G. A.....Merriam Park
Currie, Mrs. E. A.....
1973 St. Anthony Ave., Merriam Park
Reinschmidt, John A.....Mentor
Turner, H. M.....Merriam Park
Fisher, Mrs. Abbie J.....Merriam Park
O'Connor, Mrs. J. P.....Merriam Park
Brady, C. H.....Medford
Cady, J. E.....Medford
Carey, Geo. B.....Medford
Madson, M. O.....Mentor
Tagley, Joseph.....Mentor
Robinson, A. C.....Mentor
Barchert, L. W.....Mentor
Peterson, John.....Menahga
Remel, Casper....R. 10, Menomonie, Wis.
Erickson, M. L.....Medford, Ore.
Moeisch, N.....Minnesota Lake
Dreuckhaln, Fred.....Minneiska
Dreuckhaln, Wm.....Minneiska
Heller, Frank.....Minnesota Lake
Meisch, N.....Minnesota City
Sexton, Mrs. C. W....Minnetonka Beach
McPheeters, Miss Violet, Missoula, Mont.
Hartman, F. E.....Minneiska
Wright, A. V.....Mine Center, Ont.
Husser, Henry.....Minneiska
Nyberg, John.....Milaca
Lewis, K. W.....Minong, Wis.
Zook, I. T.....R. 4, Minot, N. D.

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Pederson, R. C.....R. 1, Minot, N. D.
Manders, Michael.....Minnesota Lake
Ketcheson, Melville.....Milnor, N. D.
Colvill, H. C. B.....Missoula, Mont.
Olson, E. S.....R. 1, Milan
Williamson, Wm.....Milltown, Wis.
Rice, J. P.....Minneiska
Wieser, W. J.....Minneiska
Montgomery, Geo.....Minneiska
Kronelbusch, Peter.....Minneiska
Smith, Lyndon A.....Montevideo
Oleson, M.....Montevideo
Bosshard, Herman.....Moorhead
Probstfield, R. M.....Moorhead
Reid, D. F.....Monticello
Sjorgen, L.....Monterey
Grant, Eugene.....Moorhead
Ostern, L. N.....Montevideo
Prichard, Thos.....Monticello
Nelson, Peter E.....Montevideo
Fishback, P. L.....Monmouth, Ore.
Hemstad, M. A.....Montevideo
Lien, Harry A.....Montevideo
Haberman, John M.....Monticello
Moore, J. W.....Monticello
Cottrell, T. F.....Monticello
Sauffaur, Geo.....Morristown
Engel, A.....Morgan
McRae, F. H.....Morgan
Jensen, J. P.....Morgan
Leiner, Daniel.....Morris
Grosman, Wm.....Morris
Jickling, Mrs. Lemon.....Morden, Man.
Hecht, Mrs. Geo.....Morristown
Knauss, J. C.....Morristown
Larsen, C. F.....Morgan
Meierding, H. F.....Morgan
Engelrup, Wm.....Morgan
Hancock, Mrs. F. A.....Morris
Green, Will.....Morgan
Mayer, Geo. H.....Morgan
Zielsdorf, W.....Morris
Patten, A. W.....Mora
Briggs, W. C.....Morris
Colman, Mark.....Morris
Yarger, J. A.....Morris
Sieverts, S. A.....Morris
Linsley, D. G.....Morris
Bostin, T.....Morris
Kerns, P. J.....Morris
Thorston, Olaus.....Morris
Willie, John.....Morris
Weld, J. O.....Mound
Quiring, J. J.....Mountain Lake
Janzen, Abr.....Mountain Lake
Witzel, John.....Mt. Carmel, N. D.
Moehring, Otto.....Montevideo
Eddy, J. O.....Montevideo
Steffens, Peter.....Monticello
Ostlie, A. T.....Montevideo
Wolfe, F. M.....Montevideo
Anderson, A.....Moose Lake
Newman, Chas.....Moose Lake
Ahlberg, John K.....Moose Lake
Shaw, David.....Moose Lake
Ott, Chas.....Monterey
Holland, J. H.....Monterey
McGuire, I. K.....Montrose
care of E. C. Schroeder, Moorhead
Weber, John.....Murdock
Yost, John.....Murdock
Strom, Otto.....Murdock
Lewis, J. H.....Murdock
Fost, Albert.....Murdock
Langman, Geo. T.....Murdock
Norderlus, Paul P.....Murdock
Carson, Albert.....Murdock
Broden, Gust. A.....Murdock
Gregoine, J. H.....Murdock
Schaaf, Jos. N.....Murdock
Schaaf, Vall G.....Murdock

Jacobson, Anton.....McCullough, N. D.
Jensen Anton.....McIntosh
Berg, T. M.....McIntosh
Denton, A. M.....McIntosh
Austin, O. A.....McVille, N. D.
Bragg, H. S.....Nassau
Hewitt, A.....Nassau
Roeck, E. A.....Nashua
Hasford, C. B.....Nashua
Tassa, K. E.....Nerstrand
Engstrom, Daniel...New Richmond, Wis.
Sells, Logan.....Nevis
Johnson, H. M.....Nevis
Arrowood, Jas.....Nevis
Johnson, Abe.....New York Mills
Oman, Wm.....New York Mills
Maki, I. K.....New York Mills
Hieteela, Jacob.....New York Mills
Nursu, John.....New York Mills
Pihlapxa, C. F.....New York Mills
Olson, C. F.....New York Mills
Koller, Edwin.....New York Mills
Nara, Andrew.....New York Mills
Fisher, Oswald.....New York Mills
Lahde, J. W.....New York Mills
Flood, E. J.....Newman Grove, Neb.
Ford, A. J.....New Rockford, N. D.
Verbeck, Mrs. C. L.....New York Mills
Rodgers, Dr. Emily.....Newport
Harris, Walter.....New Ulm
Beussmann, Herman.....New Ulm
Emerson, J. B..20 E. 30th St. N. Y. City.
Richardson, Ira. E.....New Brighton
Broberg, P.....New London
Guler, Stephen....New Rockford, N. D.
Hamnstrom, C. J.....New Brighton
Bailey, J. V.....Newport
Bunnell, M. C.....Newport
Pfaender, Wm. Jr.....New Ulm
Pfaender, Max.....New Ulm
Crosson, J. W.....New Brighton
Erickson, Chas. G.....New Brighton
Anderson, Alfred.....New Germany
Seastrand, Rev. A. F.....New London
Flesland, M. O.....New London
De Boer, Henry.....R. 2, New Brighton
Penning, Martin.....New Ulm
Yale Forest School....New Haven, Conn.
Knudson, Rev. P.....New Duluth
Kato, J.....New York Mills
Verplank, E. E.....New Richland
Manderfeld, Henry.....New Ulm
Richardson, Mrs. Ira E....New Brighton
Kispert, John.....Nerstrand
Leachett, S. J.....Nerstrand
Haugen, E. P.....Nerstrand
Quinn, O. T.....Nerstrand
Lundborg, Theo. A.....Nisswa
Brunes, Ole.....Nisswa
Swenson, Gunder.....Norway Lake
Howland, F. B.....Northfield
Day, Stephen H.....Northfield
Taubert, M. C.....North Redwood
Walden, J. M.....Northfield
Baldwin, H. J.....Northfield
Kjerland, O.....Northwood, Ia.
Rislow, J. C.....Northwood, Ia.
Turner, H. H.....Northfield
Hathaway, C. E.....Northfield
Hart, Geo. W.....Northwood, N. D.
Spiess, C.....Norwood
Johnson, P. E.....North Branch
Felland, Prof. O. G.....Northfield
Horejsi, Frank.....North Redwood
Effertz, Peter.....Norwood
Rice, F. O.....Northfield
Ferris, Geo. C. A.....Northfield
Lindeman, Ernest.....North Redwood
Bailey, E. G.....Northome
Torgerson, O. M.....Norcross

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Holland, Prof. P. O.....Northfield
Wade, R. H.....Odin
Menzel, H.....Odessa
Heins, C. A.....Olivia
Cheney, W. H.....Olivia
Peterson, L. J.....R. 2, Olivia
Tatting, Olof.....Olivia
Lindquist, W. A.....Olivia
Buback, Chas.....Olivia
Danielson, John W.....Olivia
Poussin, G. W.....Onigum
Conrad, John.....Ortonville
Nichols, E. B.....Ortonville
Ahsenmacher, W. J.....Ortonville
Brewer, W. W.....Orisko, N. D.
Wessel, John F.....Oran
Holmquist, Gilbert.....Ortonville
Sorensen, Soren.....Osseo
Almquist, Chas. A.....Otisville
Pengilly, J.....Osseo
Howlett, Mrs. D. D.....Oshkosh, Wis.
Laage, E. A. E.....Osakis
Stout, W. H.....Osseo
Palleson, P.....Osakis
Hinkley, C. N.....Osseo
Flint, P. P.....Osakis
Grefe, Herman.....Ottertail
Dickinson, W. E.....Osage, Ia.
Patton, U. T.....Osseo
Hendrickson, Aug.....Oslo
Macoun, W. T...Exp. Farm, Ottawa, Ont.
Johnson, Otto, C.....Otisco
Powell, Wm. H.....Osage
Anderson, Adolph.....Ottertail
Miller, Geo. H.....Ottertail
Boehl, Henry.....Ottertail
Vuern, Carl.....Oslo
Jager, H. J.....Owatonna
Wilkus, A. J.....Owatonna
Kovar, Wansel.....Owatonna
Mann, C. O.....Owatonna
Dynes, Walter S.....
.....521 Vine St. E., Owatonna
Brush, Geo.....Owatonna
McGrath, M. J.....Owatonna
Belina, F. W.....Owatonna
Wendlandt, Wm.....Owatonna
Wodarczak, Joseph.....Owatonna
Kujawa, Walter.....Owatonna
Schone, Lawrence.....Owatonna
Schneider, W. C.....R. 5, Owatonna
Cedardahl, O. L.....Owatonna
Healy, Geo.....Owatonna
Moehlenbrock, Ed.....Owatonna
Sahler, C. P.....Owatonna
Hartle, John.....Owatonna
Partridge, H. C.....Owatonna
Partridge, N. O.....Owatonna
Schafer, Barney.....Owatonna
Chambers, Alex.....Owatonna
Chapman, N. E.....Owatonna
Glaeser, Jacob.....Owatonna
Davis, Elmer.....Page, N. D.
Mueller, Ferd.....Park Rapids
Honey, C. H.....Park River, N. D.
La Mont, Scott.....Park Rapids
Nelson, C. A.....Park Rapids
Bradford, D. R.....Park Rapids
Tabor, W. M.....Park Rapids
Dennis, Isaac.....Park Rapids
Lof, A. W.....Park Rapids
Nelson, N. P. R.....Parkers Prairie
Lindall, Peter.....Parkers Prairie
Jensen, Hans.....Parkers Prairie
Abbott, C. L.....Parkers Prairie
Darst, P. L.....Parkers Prairie
Johansen, N. P.....Partridge
Buck, A. R.....Partridge
Gregersen, Jens.....Partridge
Moller, J. P.....Partridge

Manz, F. J.....Paynesville
Brown, Frank.....Paynesville
Bugbie, A. E.....Paynesville
Folsom, C. W.....Paynesville
Johnson, Wm.....Paynesville
Winther, S.....Paynesville
Dalhang, John M.....Paynesville
Roach, J. A.....Paynesville
Wagner, H. J.....Paynesville
Kruger, Wm. O.....Paynesville
Mantz, Edwin.....Paynesville
Oleson, C. E.....Perley
Ongstad, H. H.....Pelican Rapids
Kapler, G. R.....Perham
Masterson, C. H.....Pennock
Johnson, Carl E.....Pelican Rapids
McConachie, N.....Perham
Hassler, Frank.....Perham
Johnson, C. J.....Pennock
Larson, Lewis.....Perley
Hangrud, T.....Pelican Rapids
Benson, A.....Pennock
Magnus, John A.....Pennock
Gaspers, Henry.....Perham
Alberts, Aug.....Perham
Huss, Lewis.....Perham
Sieling, H. E.....Perham
Hest, Jens J.....Perley
Fredrickson, Wm.....Perley
Hovden, C. T.....Perley
Saunders, Claude F.....Pense, Sask.
Hildremyr, J.....Petersburg, N. D.
Fergusson Bros.....
..109 Chestnut St., Philadelphia, Pa.
Fryberger, W. M.....Pipestone
Fenton, Jesse R.....Pine Island
Johnson, Geo.....Pillager
Tomb, Henry.....Pine Island
Gates, J. M.....Pickwick
Smith, F. C.....Plum City, Wis.
Ritter, C. H.....Plainview
Richardson, E. H.....Plainview
Carlton, W. C.....Plainview
Engel, H.....Plainview
Plinn, J. H.....Plainview
Wedge, E. A.....Plainview
Vine, P. O.....Porter
Lucken, K. J.....Portland, N. D.
Sylte, John T.....Porter
Wilson, A.....Portage la Prairie, Man.
Snyder, C. E.....Preston
Pruteson, John.....Proctor
Gorlberg, M. A.....Prosper
Sorenson, S.....Puposky
Hangan, Evald.....Queen
Cundy, W. J.....Rapid City, Man.
Klemp, Rev. H. R.....Raymond
Sletten, P. R.....Raymond
Nelson, Helge.....Raymond
Perkins, Jas...Bx. 42, Race Track, Mont.
Steffens, C. H.....Racine
Danielson, Jas.....Randall
Grist, John.....Rapid City, Man.
Glanes, W. F.....Racine
Hanson, Henry..... Raymond
Miland, F. E.....Racine
Nelson, Peter.....Red Wing
Featherstone, S. T.....Red Wing
Frenn, P. J.....R. 6, Red Wing
Sargeant, C. A.....Red Wing
Scherf, F. A.....Red Wing
Stassen, O. H.....Redwood Falls
Kellogg, F. A.....Red Lake Falls
Porter, J. F.....Red Wing
Anticknap, H.....Regina, Sask.
Smith, Thos. Tunis.....
.....701 Center St., Redlands, Cal.
Rich, Harry P.....Red Wing
Dana, Chas. H.....Red Wing
Durfee, F. A.....Reading
Freeman, Gust E.....Red Wing

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Akenson, H. E.....Red Wing
Keye, A. F.....Red Wing
Vale, Mrs. J. H.....Redwood Falls
Martinson, Nels..574 E. 7th St., Red Wing
Heggstrom, P. L..R. 3, Bx. 23, Red Wing
Holmquist, Jacob.747 E. 7th St., Red Wing
Jensen, Rudolph, 686 E. 7th St., Red Wing
Hanson, L. O.....R. 9, Bx. 24, Red Wing
Haller, Axel.....Court House, Red Wing
Schiffrer, Rev. Val.....Redwood Falls
Johnson, And.....R. 5, Renville
Lambert, L. E.....Renville
McIntosh, S. M.....Renville
Nordby, E. J.....Renville
Seime, Olaf.....Reva, S. D.
O'Brien, Pat.....Renville
Tillisch, J. F. F.....Renville
Bonde, Peter.....Renville
Kronin, Fred.....Renville
Elwin, Maj. Jas.....Richfield
Lee, Dr. F. W.....Riceville, Ia.
Bixby, J. S.....Richville
Russell, R. L.....Rice
Weisz, J. F.....Rice
Schulte, Theo.....Richmond
Ewing, A. L.....River Falls, Wis.
Cairns, Miss Gertrude M.....
.....River Falls, Wis.
Ludwig, Mrs. Frank.....
.....R. 5, Bx. 38, River Falls, Wis.
Fitzer, Chas.....Robbinsdale
Libby, F. M.....Robbinsdale
Person, Lewis.....R. 2, Robbinsdale
Gearty, T. G.....Robbinsdale
Pedersen, A. B.....Rothsay
Close, M. J.....Robbinsdale
Hyde, Prof. C. W. G.....Robbinsdale
Eckel, Rev. Wm.....Rogers
Comstock, A. J.....Rochester
Bigelow, N. S. T.....R. 8, Rochester
Sweet, R. N.....Rochester
Jacobs, W.....Rockford
Kettenacker, Geo.....Rockford
Horney, N. R.....Rockford
Praught, A. P.....Rogers
Bradenn, John O.....Rogers
Henry, E. K.....Rogers
Scherber, J. D.....Rogers
Becker, Plus.....Rogers
Berning, H. G.....Rogers
Flathers, J. W.....Rochester
Thomas, Paul H.....Rochester
Jensen, Jens A.....Rose Creek
Wood, A. L.....Rothsay
Anderson, J. A.....Rollag
Ryan, S. W.....Royalton
Falla, John A.....Rothsay
Danielson, Solomon.....Rothsay
Peterson, Ole.....Rothsay
Pederson, A. B.....Rothsay
Korth, Aug.....Rothsay
Korth, Albert.....Rothsay
Baglaen, H. H.....Rothsay
Hansen, Chris.....Rothsay
Bergman, Aug.....Round Prairie
Branch, L. B.....Round Prairie
Mack, S. S.....Round Prairie
Sjoberg, Israel.....Roseau
Foss, A. H.....Roseau
Schlag, G.....Royalton
Skinner, J. W.....Royalton
Nelson, Chris.....Rose Creek
Carle, J. B.....Roseau
Geer, E. H.....Royalton
Dixon, Mrs. J. E.....Rosemount
Larabee, B. F.....Ronneby
Sandrock, Wm.....Rushford
Spangler, Daniel S.....Ruthton
Lambert, R. R.....Rush City
Hansen, C. N.....Rush City
Lavik, E. J.....Rugby, N. D.
Ludlow, J. B.....Rushmore
Pederson, Sigurd.....Ruthton
Jones, Thos. C.....Russell
Berg, J. A.....Rush City
Nelson, Chas.....Rush City
Haasarnd, Ole H.....Rushford
Tufsted, N. H.....Rushford
Hailand, T. S.....Rushford
Jacobus, T. J.....Ruthton
Christenson, S. P.....Rush City
Rolander, C. O.....Rush City
Johnson, John A.....Rush City
Jacobson, John.....Rushford
Hanson, Emil.....Ryder, N. D.
Flagstad, J.....Sacred Heart
Agre, Ole H.....Sacred Heart
The Deming Co.....Salem, Ohio
Wheeler, Miss Gerda.....Sandstone
Cross, Mrs. E.....Sauk Rapids
Miller, J. K.....Sauk Rapids
Briggs, H. W.....Sanborn
Hatch, Albert.....Sauk Center
Bryant, Mrs. Chas. M.....Sauk Center
Reeder, G. S.....Sauk Center
Essig, Aug.....Sanborn
Ruetz, Peter.....Sauk Rapids
Peuske, Julius.....Sauk Rapids
Jardine, S. D.....Sauk Center
Schwartz, F. C.....Sargent
Zander, A.....Sargent
Silsby, G. N.....Savage
Lehman, John.....Sauk Rapids
Fisher, A. F.....Sauk Rapids
Baker, E. D.....Sandstone
Rucktaeschel, Geo. A.....Seaforth
Bremness, Martin.....Sedan
Nelson, N. O.....Sebeka
Nelson, John O.....Sebeka
Goulds Mfg. Co.....Seneca Falls, N. Y.
Johnson, Oscar H.....Seneca, Ills.
Huber, Frank.....Shakopee
Schaefer, Alex.....Shakopee
Unze, Geo.....Shakopee
Trumbel, H. W.....Sherburn
Viebahn, F.....Sherburn
Ells, Bert.....Sherburn
Johnson, James.....Sherburn
Meininger, L.....Sherburn
Welland, Theo.....Shakopee
Ring, J. A.....Shakopee
Vierling, E. J.....Shakopee
Flikka, Olaus.....Shelly
Chapman, E. D.....Shakopee
Pettis, C. H.....Sherwood, N. D.
Lottmann, Frank W.....Sherburn
Northway, H. C.....Sherburn
Mayo, M. W.....Sherburn
Harnden, G. R.....Sherburn
Soper, David.....Sherburn
Weber, Cyrus.....Sherburn
Wells, Rollin J.....Sioux Falls, S. D.
Kinkade, W. S.....Sioux Falls, S. D.
Hakel, Adolph.....Silver Lake
Sather, O. K.....Sisseton, S. D.
Charlson, A.....Skyberg
Rasin, E. R.....Skyberg
Romberg, Frank F.....Sleepy Eye
Dittbenner, R. C.....Sleepy Eye
Foster, J. J.....Slayton
Sharp, Wm.....Slayton
Kadolph, H. W.....Slayton
Durand, Geo.....St. Michaels Sta.
Anderson, A. H.....Storden
Trowbridge, Milo E.....St. James
Wilkinson, Mrs. R. J.....Stillwater
Clark, Wm.....N. Owen St., Stillwater
Searles, Mrs. J. N.....Stillwater
Grady, R.....Snomo, S. D.
Mack, J. R.....Stephen
Kochendorfer, K.....South Park

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Senske, E. A.....South Haven
Viall, Roy.....Spring Valley
Hanchett, W. H.....Sparta, Wis.
Richardson, E. A.....Sparta, Wis.
Gmeiner, Rev. John.....Springfield
Schotzko, F. E.....Springfield
Vanvick, John.....Spiritwood, N. D.
Myrah, E. G.....Spring Grove
Moore, O. W.....Spring Valley
Livingston, R. C.....Spring Valley
Ahlstrom, John.....Spicer
Larson, Jalmar.....R. 1, Spicer
Woyen, E. P.....Spring Grove
Hughes, John S.....114 4th Ave., Mpls.
Bardkold, Martin.....Springfield
Keil, Albert.....Springfield
Flatin, G. F.....Spring Grove
Larson, Oliver.....Spicer
Rohde, Fred.....Spring Valley
Dahl, S. M.....Spicer
Frefethren, F. G.....Spring Valley, N. D.
Hamlin, J. G.....Spring Valley
Wilder, R. G.....Spring Valley
Hamlin, A.....Spring Valley
Leonard, E. A.....Spring Valley
Ingalls, J. A.....Spring Valley
McNee, J. H.....Spring Valley
Lanry, O. D.....Spring Valley
Halverson, Alfred.....Spring Grove
Rice, Aug. C.....Spring Grove
Rosendahl, Peter J.....Spring Grove
Selles, T. E.....Spring Grove
Farrington, S. C.....Spring Valley
Howard, H. F.....Spring Valley
Riddle, C.....Spring Valley
Rosenzweig, C. F.....Spring Valley
Mo, K. E.....Springfield
Washburn, Elwin.....Spring Valley
Hummel, John A.....St. Anthony Park
Snyder, Prof. Harry.....St. Anthony Park
Shaw, Prof. Thos.....St. Anthony Park
McConnell, J. O.....St. Cloud
Brevig, A. L.....Starbuck
Green, Prof. S. B.....St. Anthony Park
Aune, Martin.....Starbuck
Gibbs, F. H.....St. Anthony Park
Bull, Prof. C. P.....St. Anthony Park
Kohler, A. R.....St. Anthony Park
Ruggles, Prof. A. G.....St. Anthony Park
Gray, J. L.....1133 5th Ave. S., St. Cloud
Washburn, Prof. F. L..St. Anthony Park
Buchanan, D. W.....St. Charles, Man.
Reynolds, Prof. M. H..St. Anthony Park
Gibbs, Mrs. F. H.....St. Anthony Park
Blair, C. L.....St. Charles
Randall, Frank L.....St. Cloud
Slater, E. K.....
1226 Raymond Ave., St. Anthony Park
Valleau, Dorney.....St. Anthony Park
Andrews, T. E.....
2191 Com'nwealth Ave., St. Anth. Pk.
Freman, Prof. E. M.....St. Anthony Park
Brevig, C. L.....Starbuck
Stromsedt, O. N.....Starbuck
Peterson, Chas. V.....Stanchfield
Sartell, Mrs. J. B.....St. Cloud
Thom, John.....Stewart
Mayon, J. A.....Stewartville
Arends, T. G.....Steen
Page, Leslie.....Stewartville
Hale, Chas.....Stewartville
Greene, F. A.....Stevenson
Merdink, J. H.....Stevenson
Landin, S.....Stevenson
Rusting, W. B.....Stevenson
Peterson, Michael.....Stevenson
Swanson, John W.....Stevenson
Sutherland, E.....Stevenson
Dykeman, E. L.....Stevenson
Carlson, C. G. E.....R. 2, Stevenson
Klevann, Paul P.....Starbuck
Freeman, Prof. E. M...St. Anthony Park
Ewing, A. L.....River Falls, Wis.
Older, F. E.....
...School of Agri., St. Anthony Park
Gildarthy, A. O.....St. Ansgar, Ia.
Wilson, A. D.....
1466 Raymond Ave., St. Anthony Park
Lincoln, Robt.....
1045 Everett Court, St. Anthony Park
Piper, H. C.....Staples
Williams, M.....Staples
McIntyre, W. H.....Staples
McRae, Frank.....Staples
Krantz, John.....Staples
Sanger, M.....Staples
Read, C. W.....Staples
Hubbell, L. T.....Staples
Ward, S. M.....Staples
Clarkson, S. F.....St. Charles
Kolisch, Aug.....St. Louis Park
Berry, Frank.....Stillwater
Miks, Rev. A.....St. Michael
Key, C. L.....St. Peter
Larson, J. F.....Stillwater
Veblen, A. A.....Stillwater
Krueger, John.....R. 6, Stillwater
Jensen, Geo. C.....St. Louis Park
Jensen, And. P.....St. Louis Park
Olsen, H. P.....St. Louis Park
Hurst, John H.....St. Peter
Bates, W. K.....Stockton
Helfort, E. A.....Stillwater
Revier, Chas.....St. Peter
Wichelman, Fred C.....R. 6, Stillwater
Rixon, Chas.....St. Louis Park
Olson, Thom. J.....Storden
Wilwerding, Nick.....St. Joseph
Jarchow, Geo.....Stillwater
Nelson, C. N.....Storden
Styrlund, David V.....Strip
Schneider, Henry.....R. 5, St. Peter
Larsen, L.....R. 2, St. James
Kern, O. J. A.....R. 5, Stillwater
Nelson, John P.....R. 2, Stillwater
Mardans, J. W.....R. 9, Stillwater
Geib, Jacob.....St. Leo
Moeser, Miss Flora.....St. Louis Park
Peterson, Carl F.....Storden
Joyce, John.....Stillwater
Curtis, Dan.....Stillwater
Thompson, Fayette L.....
....4412 Lindell Blvd., St. Louis, Mo.
Kullmann, Mrs. Mary S.....
...3422 St. Paul Ave., St. Louis Park
Hulburt, H. H.....
..2268 Knapp Ave., St. Anthony Park
Carter, F. L.....St. Louis Park
Moeser, Mrs. Frank.....St. Louis Park
Johnson, Emil E.....
.....415 N. Greeley, Stillwater
Walisch, Peter.....St. Michaels Station
Duhr, Rev. M.....St. Michaels Station
Welker, Jas. M.....Sutherland Sask.
Schultz, H. G.....St. Peter
Ashburner, Jas.....R. 2, Stillwater
Dick, Jacob.....St. Michael
Barthel, Nick.....St. Michael
Schunneman, Stephen.....St. Michael
Dick, H. W.....St. Michael
Dick, Arnold.....St. Michael
Dahlheimer, Val.....St. Michael
Hagemever, Jos.....St. Michael
Zachman, Tom.....St. Michael
Hengles, H.....St. Michael
Lindblad, John.....Svea
Johnson, J. E.....R. 1, Svea
Erickson, E. P.....R. 1, Svea
Rasmusson, E. R.....Svea
Johnson, Oscar H.....R. 2, Svea
Harley, Hugh.....Swan River, Man.
Isaacson, C. W.....Swea City, Ia.

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Bloomquist, Ole.....Svea
Peabody, B.....St. Charles
Smith, S. D.....Stanton
Putnam, A. D.....St. Charles
Culgan, N.....St. Charles
Brewer, R. C.....St. Charles
Brown, Jos.....St. Cloud
Tschieda, Mat.....St. Cloud
Miller, Henry.....St. Cloud
Johnson, P. E.....St. Cloud
Freeman, W. S.....St. Cloud
Stark, A. J.....St. Cloud
Colburn, G. B.....St. Cloud
Robinson, Jas. L.....Stacy
Moore, Walter L.....
..Forestry School, St. Anthony Park
Nelson, C. R.....Stanton
Stewart, Prof. John....St. Anthony Park
Wright, A. A.....St. Cloud
Anderson, A.....
2563 Doswell Ave., St. Anthony Park
Smith, L. W.....R. R. 2, St. Paul
Johnston, John...1315 Beech St., St. Paul
Barrows, Morton....Globe Bldg., St. Paul
Lundholm, Dr. E. M.....
.....677 University Ave., St. Paul
Berry, J. Bert.....
.....995 Linwood Place, St. Paul
Dunn, John W. G.....
.....1033 Lincoln Ave., St. Paul
Stork, W. E.....
.....363 S. Cleveland Ave., St. Paul
Andrews, Gen. C. C.....
.....833 Goodrich Ave., St. Paul
Dickmann, E. J.....R. 2, West St. Paul
Wille, F. W.....
.....1046 Wakefield, Ave., St. Paul
De Wolf, Mrs. Jessie.....
.....654 Hague Ave., St. Paul
Skytte, C. J.986 E. Magnolia St., St. Paul
Hintermister, J. Henry.....
.....205 Dispatch Bldg., St. Paul
Anderson, J. C. B.....
.....1285 Portland Ave., St. Paul
Washburn, W. O.608 Grand Ave., St. Paul
Crosby, Oliver, 804 Lincoln Ave., St. Paul
Grant, Mrs. I. J.....
.....731 Ashland Ave., St. Paul
Rittle, Miss Anna E.....
.....409 Marshall Ave., St. Paul
Harmegmes, Mrs. E. P. C.....
.....972 Portland Ave., St. Paul
Gibbs, Miss Ida....318 Avon St., St. Paul
Boardman, Mrs. H. A.....
.....1336 River Boul., St. Paul
Ruff, Mrs. D. W. C.....
.....732 Globe Bldg., St. Paul
McMurran, Mrs. Eleanor.....
.....630 Globe Bldg., St. Paul
Munroe, Hugh, Clarkson Coal Co., St. Paul
O'Neill, O. H....608 Globe Bldg., St. Paul
Towle, P. J...730 Goodrich Ave., St. Paul
Sohlberg, Dr. O...329 E. 7th St., St. Paul
Foote, P. H.....St. Paul Park, St. Paul
Schreiner, Francis X.....
.....1176 So. Robert St., St. Paul
Greaza, A. E.....R. 4, St. Paul
Williams, W. H.....
....903 Pioneer Press Bldg., St. Paul
Yoerg, Anthony.....
....710 Pioneer Press Bldg., St. Paul
Fitzpatrick, John F.....
.....Merchants Nat. Bank, St. Paul
Anderson, Alf. G.....Tamarack
Ness, H. H.....Tappen, N. D.
Bergh, N. N.....
.....American Express Co., St. Paul
Prentice, Chas. D.1132 Beech St., St. Paul
Stewart, Mrs. A. F.....
.....776 Farquier St., St. Paul
Bartram, Mrs. C. S.....
.....1996 Iglehart St., St. Paul
Shepley, Mrs. E. L.....
.....12 Summit Court, St. Paul
Heller, C. T.....33 S. 10th St., St. Paul
Grasselli Chemical Co.....St. Paul
Graves, Mrs. W. F.....
.....779 Summit Ave., St. Paul
Beardsley, B. F.....
...408 Am. Nat. Bank Bldg., St. Paul
Rothschild, Mrs. Henry.....
.....553 Marshall Ave., St. Paul
Stryker, Mrs. J. E.....
.....510 Iglehart St., St. Paul
Chapman, H. H.331 Jackson St., St. Paul
Maschger, A. F...859 E. 7th St., St. Paul
Jackson, P. T.1722 Summit Ave., St. Paul
Brown, Mrs. G. S.....
.....730 Selby Ave., St. Paul
Lilygreen, Mrs. Frank.....
.....756 Ashland Ave., St. Paul
Carpenter, M. B.Hotel Aberdeen, St. Paul
Fockler, Louis.366½ Selby Ave., St. Paul
Lewis, Judge C. L.State Capitol, St. Paul
Boyeson, Mrs. Henry C.....
.....350 Minn. St., St. Paul
Smith, Mrs. W. Siwart.....
.....541 Portland Ave., St. Paul
Smith, Mrs. J. H.249 Ramsey St., St. Paul
Gutridge, A. W.....
.....Associated Charities, St. Paul
Fillebrom, Mrs. J. Walter.....
.....132 E. 3d St., St. Paul
Strate, E. B.....658 Plum St., St. Paul
Lange, Ed.....191 Maria Ave., St. Paul
Sandell, Geo....682 Aurora Ave., St. Paul
Hadley, Emerson.....
.....123 Farrington Ave., St. Paul
Jefferson, L. C.....
.....1126 Summit Ave., St. Paul
Lightner, Mrs. W. H.....
.....318 Summit Ave., St. Paul
Raudenbush, Mrs. S. W.....
.....789 Lincoln Ave., St. Paul
Gantzer, Mrs. J. A.....
.....Adams and Hoyt Ave., St. Paul
Miller, Dr. J. M.....
.....820 Ger. Life Bldg., St. Paul
Yerxa, Geo. W..1679 Lafond St., St. Paul
Smith, Mrs. Chas. G.....
.....400 Marshall Ave., St. Paul
Whitney, Geo. G.....
.....Schurmeier Wagon Co., St. Paul
Lundgren, Mrs. E. E.....
.....591 Olive St., St. Paul
Berrisford, E. S..386 Robert St., St. Paul
Jackson, Mrs. Hanna.....
.....1120 Payne Ave., St. Paul
Bircher, Wm.....661 Ohio Ave., St. Paul
Campbell, H. A.....
.....1509 Ashland Ave., St. Paul
Guiterman, A. S.....
.....730 Lincoln Ave., St. Paul
Schulz, Carl G.1713 Dayton Ave., St. Paul
Tuthill, Geo. P.....
.....125 Endicott Arcade, St. Paul
Boss, Prof. Wm.....
.....1439 Raymond Ave., St. Paul
Ogulin, Rev. A.....
.....197 Geranium St. W., St. Paul
Pilcher, L. C.....1024 Miss. St., St. Paul
Palmer, C. A.....1024 Miss. St., St. Paul
Dunn, W. W.....397 Bates Ave., St. Paul
Vollbrecht, Mrs. Louise.....
S. Robert and Beetle St., W. St. Paul
Grant, L. R.....596 Canada St., St. Paul
Scharff, Mrs. J. M.....
.....1413 Albany St., St. Paul
Walther, Mrs. T. G.....
.....696 Goodrich Ave., St. Paul

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Clinch, Miss L. H.....
.....1852 Dayton Ave., St. Paul
Miller, Miss Hattie E. F.....
.....731 E. 4th, St. Paul
Wann, Mrs. T. L.514 Grand Ave., St. Paul
Anderson, Claus....159 Duke St., St. Paul
Darling, Dr. C. H.....
.....697 Endicot Arcade, St. Paul
Bogart, Mrs. H.....
.....1761 Lincoln Ave., St. Paul
Willius, F...N. G. A. Bk. Bldg., St. Paul
Nielsen, Hans.....159 Duke St., St. Paul
Carlson, Alfred....358 Banfil St., St. Paul
Bramhall, Mrs. W. E.....
.....506 Iglehart St., St. Paul
Whitney, Geo. G.....
....9th, Broadway and Pine, St. Paul
Meyerhaeuser, F.....
..Nat. Ger. Am. Bank Bldg., St. Paul
O'Brien, C. D...214 Globe Bldg., St. Paul
Haagland, A. H...G. N. Ry. Co., St. Paul
Dockstader, Mrs. W. E.....
.....Bradley St. Sta., St. Paul
Lewis, Chas. L....State Capitol, St. Paul
Hubbard, L. F.....Globe Bldg., St. Paul
Kirk, R. A..2d and Jackson Sts., St. Paul
Fairbanks, Morse & Co.....St. Paul
Green, Nathaniel.....
...2095 Commonwealth Ave., St. Paul
Lange, Prof. D.....
.....Humboldt High School, St. Paul
Rustad, H. J.....Thief River Falls
Loftnes, A. G.....Thief River Falls
Hay, J. H.....Thief River Falls
Parks, W. S.....Thorp, Wis.
Bradley, M. F.....Tintah
Hundt, G.....Tintah
Ramler, Herman.....Torah
Zeitinger, I.....Tolley, N. D.
Fendall, Chas. E.....Towson, Md.
Willenbring, John A.....Torah
Ahmann, J. J.....Torah
Bruemmer, Theo.....Torah
Moses, Mrs. W. S.....Tracy
Parsans, W. T.....Truman
Jacobson, H.....Triumph
Steen, John.....Triumph
Bates, Allen.....Tracy
Seiter, H. F.....Tracy
Evans, D. H.....Tracy
Pierce, O. L.....Tracy
Subilia, Henry A.....Tracy
Starr, Mrs. Frank E.....Tracy
Rialson, Mrs. L.....Tracy
Swenson, A. J.....Tracy
Hackerson, S. O.....Tracy
Anderson, S.....Tunbridge, N. D.
Skrivseth, T. T.....Turtle River
Aamath, L. H.....Twin Valley
Nelson, Hans.....Twin Valley
Hanson, Osten.....Twin Valley
Klemetsrud, O. H.....Twin Valley
Nelson, Wilhelm.....Twin Valley
Strand, A. K.....Twin Valley
White, R. A.....Twin Lakes
Conlin, E. E.....Two Harbors
Rose, L. D.....Two Harbors
Carlson, Chris.....Two Harbors
Geddings, Archie.....Two Harbors
Cavallin, E. E.....Two Harbors
Bentley, Mrs. Annie.....Twin Valley
Bjerke, E. N.....Twin Valley
Olson, C. O.....Twin Valley
Erickson, Alex.....Tyler
Larson, Mons.....Tyler
Wilson, Oscar.....Underwood
Klaksvik, Iver S.....Underwood
Aune, Olof.....Underwood
Hauge, S. B.....Ulen
Gilberston, J. E.....Utica
Gilbertson, G. G.....Utica
Gilbertson, O. S.....Utica
Wiger, N. N.....Ulen
Larson, Lewis A.....Ulen
Klementson, Helge.....Ulen
Bremer, Thos.....Ulen
Sather, Ole.....Ulen
Twedt, Swen A.....Ulen
Klementson, John.....Ulen
Holte, M. O.....Ulen
Grettum, Henry.....Ulen
Sather, M.....Ulen
Ravine, F. H.....Ulen
Alme, O. T.....Ulen
Jenson, L. P.....Underwood
Elsen, E. E.....Underwood
Proddy, F. S.....Utica
Garberg, Harry C.....Underwood
Bingham, C. E.....Underwood
Cooke, F. J.....Ulen
Getchell, Fred H.....Valley City, N. D.
Hilborn, E. C.....Valley City, N. D.
Moore, Chas. E.....Valley City, N. D.
Carpenter, G. L.....Vermillion, S. D.
Thomas, E. L.....Vergas
Cowles, E. D.....Vermillion, S. D.
Richie, W. J. F.....Verndale
Ireland, W. H.....Verndale
Kelly, Peter.....Verdi
Stregel, Henry.....Verndale
Gray, Dr. F. T.....Vesta
Zastrow, John C.....Vernon Center
Martinson, John.....Veblen, S. D.
Lindblad, Otto.....Virginia City
Marion, C.....Villard
Diethelm, M.....Victoria
Dubbels, Jos.....Viola
Cosgrove, L. J.....Villard
Clemens, John.....Villard
Gastfield, A. F.....Victor, Mont.
Read, E. E.....Vining
Fossum, I. A.....Virginia
Kerr, Wm.....Villard
Thimmesch, Theo.....Villard
Pennie, T. J.....Villard
Bogle, A. E.....R. 5, Vinton, Ia.
Likness, Berdinus.....Viz, S. D.
Gundeman, H.....Wabasha
Lawrence, Jas. G.....Wabasha
Crawford, W. M.....Wahpeton, N. D.
Peterson, F. J.....Waconia
Fink, Christ.....Waconia
Sutter, John.....Wadena
Veden, J. C.....Wadena
Gerdsen, Henry.....Waconia
Rietz, J. H.....Waconia
Fandson, N. P.....Wadena
Detwiler, S. B.....Wabasha
Bock, John.....Wabasso
Pederson, M. P.....Walnut Grove
Johnson, Geo.....Waltham
Peterson, J. Oscar.....Walnut Grove
Smith, R. W.....Washburn, Wis.
Keyes, Irene M.....Wayzata
Kreatz, J. F.....Wayzata
Liggett, Rev. W. H.....Wayzata
Vickery, R. A.....
....Dept. Entomology, Wash, D. C.
Cox, W. T..Forest Service, Wash., D. C.
Knutson, N. S.....Waterville
Rowe, C. O.....Wanamingo
Halverson, Henry.....Wanamingo
Peterson, Frans.....Warren
Clement, W. A.....Waseca
O'Connell, John R.....Waverly
Burton, John A.....Watab
Clinton, Nic.....Watkins
Cox, W. T.....Washington, D. C.
Johnson, J. P.....R. 3, Wayzata
Struble, G. B.....Wawota, Sask.
Day, F. T.....Waseca
Watson, C. H.....Waseca

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Stucky, Anton.....Waseca
Griffin, Fred.....Warroad
Hawkins, Alf. O.....Wayzata
Nelson, O. L.....Wayzata
Redpath, Thos.....Wayzata
Spates, S. R.....Wayzata
Drum, S. H.....Waseca
Bishman, Mrs. Mary A.....Waseca
Sahler, Emil.....Waseca
Catlin, T. J., M. D.....Waukenabo
Mahler, Adolph.....Waseca
Roesler, F. W.....Waseca
Durand, Albert.....Waseca
Heimark, J. H.....Warwick, N. D.
Hawkes, A. S.....Waseca
Oyen, O. J.....Watson
Ferodowill, F. X.....Wayzata
Brown, Ernest L.....Warren
Sorg, And. F.....Waterville
Johnson, John A.....R. 2, Waseca
Bockman, C. A.....Waterville
Vilman, Rev. Anthony.....Watkins
Erwin, D. A.....Waseca
Smith, Lyman S.....Wayzata
Jardine, J. B.....R. 3, Wayzata
Tracy, G. A.....Watertown, S. D.
Strommer, And.....Wegdahl
Rainy, Wm.....Welcome
Lepine, W. E.....Welcome
Reed, S. J.....Webster, S. D
Nelson, Adolph.....Webster
George, W. G.....Weaver
Maurer, Fred.....Weaver
Persson, Nels.....Welcome
Skinemoen, Ole.....Wendell
Winters, J. E.....Weaver
White, R.....Weaver
Anderson, Ole.....Wendell
Nelson, Hilding.....Wendell
Montgomery, R. J.....Weaver
Cowles, Fred J.....West Concord
Highmark, L. P.....West Duluth
Talcott, Mrs. A. L.....Westbrook
Eriksen, Halgrin.....Westbrook
Bauer, Joe.....Westbrook
Nelson, Peter.....Westbrook
Knudsen, A. C.....Westbrook
Paynette, Jos.....West Duluth
Marshall, Peter.....West Duluth
Broughton, W. R.....West Concord
Fagalson, A. J.....West Concord
Briggs, S. C.....West Concord
Cohrs, E. J.....Westbrook
Rasche, G. T.....Westbrook
Marterud, S. P.....
.....429 N. 26th Ave., West Duluth
Dodds, J. E.....Wheaton
Shattuck, G. W.....Whalan
Shattuck, B. N.....Whalan
Dickson, Geo. F.....Wheaton
Larson, John L.....Wheaton
Swedberg, Jas. S.....White Bear Lake
Swan, J. W.....White Bear Lake
Harbaugh, Fred.....White Bear
Farrar, F. F.....White Bear
Howard, J. R.....White Earth
Wilcox, Mrs. E. W.....White Bear
Hawkins, F. C....R. 1, White Bear Lake
Olson, Mrs. Amelia.....White Bear
Wampler, A. J.....White Bear Lake
Knowlton, Alf. S.....White Bear Lake
Gorvin, M.....White Rock, S. D.
Johnson, Isak.....White Rock, S. D.
Lindgren, John.....White Rock, S. D.
Westgaard, Carl.....White, S. D.
Allen, E. M.....White Bear
Walgren, S. J.....R. 2, Willmar
Kleberg, John.....R. 2, Willmar
Peterson, C. O.....R. 2, Willmar
Bjornberg, J. G.....Willmar
Powell, F. W.....Willmar
Eklund, P. A.....Willmar
Birch, C. A.....Willmar
Olson, J. B.....Willmar
Rains, Dr. J. M.....Willmar
Sperry, A. H.....Willmar
Frye, P. H.....Willmar
Bjornberg, Joe C.....Willmar
Selvig, C. C.....Willmar
Tollefson, M. C.....Willmar
Rice, A. E.....Willmar
Baklund, C. A.....Willmar
Barnstad, Ole.....Willmar
Gynild, Rev. E. E.....Willmar
Freeberg, J. G.....Willmar
Bonde, Peter.....Willmar
Weitzel, J. J.....Wilmot
Adams, A. P.....Willmar
Eddy, Chas. T.....Willmar
Vold, F. H.....Willmar
Spicer, Russell.....Willmar
Gates, Rev. Horatio.....Willmar
Hilleboe, H. S.....Willmar
Carruthers, J. T.....Willmar
Johnson, Otto.....R. 5, Willmar
Olson, Magnus.....R. 5, Willmar
Thunstedt, John.....Willmar
Peterson, P. C.....Willmar
Elfstrom, Axel F.....Willmar
Lundgren, Walter J.....
.....Bx. 13, R. 2, Willmar
Yahnke, Walter A..Homer Rd., Winona
Johnson, Jens. J.....Windom
Hill, L. A.....Winnebago
Mathisen, Geo. W.....Windom
Smith, D. C.....Winnebago
Hesselgrave, R. V.....Winnebago
Brown, Aug.....Winthrop
Scott, W. G.....Winnipeg, Man.
Moulton, H. R.....Windom
Merritt, C. W.....Winona
Brown, John A.....Windom
Mighton, S. R.....
105 Birds Hill Rd. E., Winnipeg, Man.
Batho, Geo.....Bx. 1330, Winnipeg, Man.
Brodrick, Prof. F. W.....
.....Agri. College, Winnipeg, Man.
Noble, D. A.....Windom
Baird, Rev. And. B.....
.....247 Colony St., Winnipeg, Man.
Tingdahl, Theo.....Winnipeg Junction
Mahony, D. J.....Winona
Strunk, A. F.....Windom
Robinson, Prof. V. R.....Windom
Pheiffer, C. A.....Winona
Sanger, W. F.....Windom
Brown, Thos. S.....Windom
Brown, F. J.....504 W. 5th, Winona
Erickson, Chas.....Bx. 35, R. 3, Winthrop
Grassie, Wm.....
....53 Harvard Ave., Winnipeg, Man.
Simons, F. R.....Wogansport, N. D.
Otterson, Lars. G.....Wolverton
Sundberg, Chas. A.....Worthington
Gaiser, John.....R. 5, Worthington
Rebers, H.....Wood Lake
Nystrom, Gust.....Worthington
Mahlberg, Alf.....Worthington
Tierney, D. P.....Woodbine, Ala.
Friene, H. C.....Wood Lake
Jensen, N. C.....Wyndmere, N. D.
Grant, John.....Wyoming
Whiting, Geo. H.....Yankton, S. D.
Ackerman, A. W.....Young America
Gurney, C. W.....Yankton, S. D.
Church, W. T.....York, N. D.
Skaar, N. O.....Zumbrota
Keasling, F. J.....Zimmerman
Van de Bogart, W. S.....Zumbrota
Freeman, C. H.....Zumbrota
Duncan, Geo.....Zumbro Falls

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Leider, E. H.....Zimmerman
McCoy, G. E.....Zumbrota
Fansen C.....Zumbrota
Romo, H. G.....Zumbrota
Romo, O. G.....Zumbrota
Peterson, W. E.....Zumbrota
Mohs, Peter.....Zion
Signard, R. R.....Zumbrota
Lowe, John.....Zumbrota
Waurts, L. H.....Zumbrota

Life Members.

Mackintosh, Prof. R. S.....Ames, Ia.
Manner, C. J.....Anamoose, N. D.
Eliason, M. A.....Artichoke Lake
Nelson, Jr., A. A.....Atwater
Leonard, Geo. S.....Audubon
Clarke, Fred H.....Avoca
Norwood, F. F.....Balaton
Johannesson, L.....Beltrami
Wagner, J. F.....Bennett, Ia.
Cline, Wm.....Bertha
Moorhead, W. W.....Bethany, Mo.
Poore, Hamlin V.....Bird Island
Boushka, Frank.....Biscay
Manning, Warren H.....
..1146 Tremont Bldg., Boston, Mass.
McComb, Richard.....Brandon, Man.
Cutting, F. E.....Byron
McTeague, Rev. P.....Brownsdale
Mills, G. R.....Buffalo
Hall, D. S.....Buffalo Lake
Siverts, Peter .....Canby
Peterson, Geo. A.....Canby
Gjemse, L. J.....Cannon Falls
Tanner, Wm.....Cannon Falls
Snyder, S. W.....Center Point, Ia.
Sherman, E. M.....Charles City, Ia.
Noren, Geo.....Chisago City
Peterson, Wm. A.....
....Lincoln & Peterson Aves., Chi., Ill.
Eklof, John.....Cokato
Scott, Rev. W. T.....Colfax, Wis.
Fossum, G.....Cottonwood
Wentzel, Louis.....Crookston
Regeimbal, L. O.....R. 2, Crookston
Wentzel, Wm. F.....R. 5, Crookston
Wentzel, A. E.....R. 5, Crookston
Thomas, A. A.....Dayton, Ohio
Burton, Miss Hazel.....Deephaven
Savs, Rev. Mathias.....Delano
Lien, Thos. J.....Delavan
Hoverstad, T. A.....Dennison
Maher, John W.....Devils Lake, N. D.
Waldron, L. R.....Dickinson, N. D.
Mann, W. P.....Dodge Center
Sebenius, John Uno.....
.....Wolvin Bldg., Duluth
Williams, J. G....931 Endicott St., Duluth
Arnold, L. B.....Wolvin Bldg., Duluth
Danforth, Wm.....Eau Claire, Wis.
Dickerson, Wm.....Elk Point, S. D.
Wheeler, C. F.....Excelsior
Wright, R. A.....Excelsior
Lyman, A. B.....Excelsior
Longyear, E. J.....Excelsior
O'Connors, Patrick H.....Excelsior
Christensen, P. C.....Fairmont
St. John, B. E.....Fairmont
McKisson, G. D.....Fairmont
Andrews, C. H.....Faribault
Hannah, Robt.....Fergus Falls
Kankel, Otto.....Fertile
Alin, Alex.....Fullerton, N. D.
Briard, F. W.....Gaylord
Austin, L. E.....Glencoe
Trow, A. W.....Glenville
Volstad, Hon. A. J.....Granite Falls
Marshall, F. F.....Grove City
Prosser, E. M.....Gully
Howard, J. A.....Hammond
Voight, L. H.....Hastings
Halvorson, Halvor.....Hills
Lund, I. E.....Hopkins
Hermanson, Herman.....Hopkins
McVeety, J. A.....Howard Lake
Eddy, W. H.....Howard Lake
Baker, Geo. A.....Janesville
Thompson, Mrs. Ida.....Kenmare, N. D.
Peterson, J. G.....Kensington
Barsness, J. A.....Kenyon
Harris, F. I.....LaCrescent
Evans, Sheldon J.....LaCrescent
Doughty, J. Cole.....Lake City
Underwood, Roy D.....Lake City
Underwood, Mrs. Anna B.....Lake City
Knight, H. G.....LeRoy
Quammen, Ole S.....Lemmon, S. D.
Williams, M. M.....Little Falls
Older, C. E.....Luverne
Loose, E. C.....Luverne
Teigen, Geo.....Lowry
White, J. C.....Mabel
Soholt, Martin.....Madison
Gjestrum, M. L.....Mankato
McCulley, Preston.....Maple Plain
Nelson, John A.....Maynard
Swanson, Aug. S.....Merriam Park
Foster, Wesley S.....Milaca
Dressler, Otto W....428 Russell N., Mpls.
Clark, Chas. B.....1513 Bryant N., Mpls.
Cummins, J. R.....Mpls.
Adams, Mrs. Louisa J.....
Davey, Dr. Flora M.....
.....500 Medical Blk., Mpls.
.....1716 Crystal Lake Ave., Mpls.
Dressler, Otto W...428 Russell No., Mpls.
Dunwoody, Wm. H.....
.....104 Groveland Terrace, Mpls.
Flannery, Geo. P.....
.....2416 Blaisdell Ave., Mpls.
Fletcher, F. F....2816 W. 44th St., Mpls.
Stacy, F. N.....3115 S. E. 4th, Mpls.
Franklin, A. B.....Sta. F., R. 1., Mpls.
Gale, Ed. C.....Security Bldg., Mpls.
Halbert, Geo. T.....206 S. 4th St., Mpls.
Herrick, U. G.....Carrier 54, Mpls.
Hobart, A. W....1412 W. 36th St., Mpls.
Hunter, C. C.....44 S. 10th, Mpls.
Jager, John.....5241 Upton So., Mpls.
Johnson, Gust....2620 E. 22nd St. Mpls.
Loring, A. C.....202 Clifton Ave., Mpls.
Loring, C. M.....100 Clifton Ave., Mpls.
Loring, Mrs. C. M.....
.....100 Clifton Ave., Mpls.
Nagel, Eggert....1118 W. Lake St., Mpls.
Neil, V. A., Carrier 98.....Mpls.
Nelson, B. F.....1125 5th St. S. E. Mpls.
Roberts, Dr. T. S.....
.....1603 4th Ave. So., Mpls.
Todd, Fred G.....
.....10 Phillips Pl., Montreal, P. Q.
Teigland, J. L.....Minneota
Swennes, Knute.....Minneota
Pond, H. H.....R. 3, Sta. F., Mpls.
Peet, Wm.....Boston Blk., Mpls.
Paulson, Johannes.....Mpls.
Smiley, Daniel.....Mohonk Lake, N. Y.
Wise, Geo. A.....Moorhead
Wilson, Harold S.....Monroe, N. Y.
Scranton, Ellsworth.....Montrose
Moyer, L. R.....Montevideo
Macauley, T. B.....Montreal, Can.
Stensrud, Hans.....Moorhead
Wheaton, D. T.....Morris
Hilstad, O. C.....Nicollet
Schell, Otto .....New Ulm
Dunsmore, Henry.....Olivia

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Harris, E. E.....Onlaska, Wis.
Melinat, Rev. Max.....Ormsby
Chrisman, Chas. E.....Ortonville
Pracna, Frank.....Osseo
Hart, W. H.....Owatonna
Cashman, T. E.....Owatonna
Cashman, M. R.....Owatonna
Spencer, N. V.....Park Rapids
Mosbaek, Ludvig.....Partridge
McKibben, A. T.....Ramey
Chambers, Rev. R. F.....Redwood Falls
Anderson, G. A.....Renville
Gates, A. H.....Rice
Saunders, Wm.....Robbinsdale
Mayo, Dr. C. H.....Rochester
Peterson, K. K.....Rothsay
Hawley, T. C.....
.....2630 M. St., Sacramento, Cal.
Pattridge, C. A.....Sanborn
Stager, Mrs. Jennie.....Sauk Rapids
Sodergren, R. A.....Scandia
Korista, J. S.....Silver Lake
Jerabek, J. S.....Silver Lake
Terry, Alfred.....Slayton
Durbahn, A.....Sleepy Eye
Hagen, O. W.....Sleepy Eye
Mo, Hans .....Sleepy Eye
Kennedy, J. H.....Sheyenne, N. D.
Manda, W. A.....Short Hills, N. J.
Lingen, Carl.....Starbuck
Nehring, Edward .....Stillwater
Burtzlaff, Paul.....Stillwater
Daniels, R. L.....Stillwater
Cady, LeRoy.....St. Anthony Park
Drew, Prof. J. M.....St. Anthony Park
Peterson, R. M.....
.....Hort. Div., St. Anthony Park
Randall, E. W.....St. Anthony Park
Larson, Louis M.....St. Louis Park
Irish, Prof. H. C.....
....Botanical Gardens, St. Louis, Mo.
Swanson, J. H.....St. James
Briggs, A. G....G. W. Ry. Co., St. Paul
Engman, Nels.....
....Old Peoples Home, St. Paul Park
Hartman, M. D....661 Plum St., St. Paul
Irish, Prof. H. C.....
Nussbaumer, Fred.....St. Paul
Ruff, D. W. C..732 Globe Bldg., St. Paul
Yanish, Edward.....Bx. 262, St. Paul
Strand, G. W.....Taylors Falls
Loftness, A. G.....Thief River Falls
Brink, C. C.....Tracy
Pederson, J. S.....Walnut Grove
Cooper, Madison.....Watertown, N. Y.
Hawkinson, Chas.....Wayzata
Rowe, Chas.....Wayzata
Fournelle, Peter.....White Bear Lake
Fulton, T. C.....White Bear Lake
Schaupp, Charles F.....Wilson
Van Nest, R. A.....Windom
Johnson, A. A.....Winnebago
Larson, C. L.....Winthrop
Warren, W. T.....Woodstock
Carlisle, S. A.....Wyoming
Harrison, Rev. C. S.....York, Nebr.
Peterson, W. A.....Yuma, Ariz.

Honorary Life Members.

Wedge, Clarence.....Albert Lea
Hansen, Prof. N. E....Brookings, S. D.
Patten, C. G.....Charles City, Ia.
Phoenix, F. K.....Delavan, Wis.
Henry, Forest.....Dover
Brand, O. F.....Faribault
Reed, A. H.....Glencoe
Bass, J. G.....Hamline
Corp, Sidney.....Hammond
Kramer, J. C.....LaCrescent
Underwood, J. M.....Lake City
Sargeant, Mrs. H. B.....Lake City
Kellogg, Geo. J.....Lake Mills, Wis.
Schutz, R. A.....LeRoy
Lacey, Chas. Y.....
507 W. Ocean Ave., Long Beach, Cal.
Gibbs, Oliver ....Melbourne Beach, Fla.
Bowen, Mrs. Jas....327 Beacon St., Mpls.
Bush, A. K.....1014 S. E. 7th, Mpls.
Elliot, Wyman....1412 W. 47th St., Mpls.
Latham, A. W.....3000 Dupont S., Mpls.
Lyons, Wm.....2924 Clinton, Mpls.
Gaylord, Edson.....Nora Springs, Ia.
Gardner, Chas. F.....Osage, Ia.
Day, Ditus.....Pipestone
Perkins, T. E.....Red Wing
Smith, C. L.....R. 8, Spokane, Wash.
Coleman, N. J.....St. Louis, Mo.
Kenney, S. H.....Waterville
Philips, A. J.....West Salem, Wis.
Tilson, Mrs. Ida E....West Salem, Wis.
Richardson, S. D.....Winnebago

Life Members Deceased in 1909.

Lowry, Thos.....Mpls.
Smith, Truman M.....San Diego, Cal.

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Additions to Society Library in 1909.

Minnesota State Horticultural Society, Annual Report, 1906.
Minnesota State Horticultural Society, Annual Report, 1907.
Minnesota State Horticultural Society, Annual Report, 1908.
Missouri Botanical Garden, Annual Report, 1908.
Trees of Northern States and Canada, R. B. Hough, 1909.
Forestry, Principles of American, S. B. Green, 1908.
Progressive Poultry Culture, A. A. Brigham.
Plant Culture, G. W. Oliver.
Small Fruit Culturist, A. S. Fuller.
The American Apple Orchard, F. A. Waugh.
Principles of Breeding, E. Davenport.
The Garden in Literature, Oliver Gibbs.
Minnesota Plant Studies, No. 1, 1908.
Minnesota Plant Studies, No. 2, 1908.
British Columbia Fruit Growers' Association, 1908.
Pomology and Fruit Growing Society of Province of Quebec, 1907.
Royal Horticultural Society, Journal of, 1908.
Royal Horticultural Society, Journal of, 1909.
American Association of Nurserymen, 1908.
Ohio Division of Horticulture, 1907-08.
Florida State Horticultural Society, Annual Report, 1908.
Board of Park Commissioners, Minneapolis, Annual Report, 1908.
Colorado State Bee-Keepers' Association, Annual Report, 1908.
Montana Horticultural Society, Annual Report, 1908.
Western New York Horticultural Society, Annual Report, 1909.
American Rose Society, Annual Report, 1908.
Arkansas State Horticultural Society, Annual Report, 1908.
Society of American Florists, Annual Report, 1908.
North Dakota Farmers' Institute, Annual Report, 1908.
Peninsula Horticultural Society, Annual Report, 1909.
New York State Fruit Growers' Association, Annual Report, 1909.
Massachusetts Horticultural Society, Annual Report, 1908.
Georgia State Horticultural Society, Annual Report, 1908.
Western Horticultural Society, Annual Report, 1908.
Nova Scotia Fruit Growers' Association, Annual Report, 1903.
Nova Scotia Fruit Growers' Association, Annual Report, 1904.
Nova Scotia Fruit Growers' Association, Annual Report, 1905.

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Fruit-Breeding Farm, Work at State, Chas. Haralson..... 375
Fruits for Minnesota Planting 220
Fruits Originated, etc., Some New, Prof. N. E. Hansen..... 443
Frye, P. H., Picking and Marketing Apples for the Local Market..... 367
Fungous Diseases, A Department for, Prof. E. M. Freeman..... 218

G

Gibbs, F. H., Glass as an Adjunct to Vegetable Gardening..... 201
Gibbs, Mrs. F. H., Annual Report, Minnesota State Rose Society, 1908..... 208
Glencoe Trial Station, A. H. Reed..... 244
Glencoe Trial Station, A. H. Reed..... 52
Green, Prof. S. B., Annual Report, Central Trial Station..... 41
Green, Prof. S. B., Midsummer Report, Central Trial Station..... 241
Green, Prof. S. B., Growing New Fruits..... 299
Green, Prof. S. B., President's Annual Address..... 10
Green, Prof. S. B., Strawberries from Seed..... 276
Green, Prof. S. B., Stump Rot in Cabbage..... 275
Green, Prof. S. B., Unselfish and Useful Work..... 116
Gurney, Col. C. W., The Distribution of Nursery Stock..... 307

H

Hagen, O. J., Annual Meeting, North Dakota State Horticultural Society, 1909.. 106
Hagen, Ole J., Midsummer Report, Hendrum Trial Station..... 246
Hamilton, Carl, Summer Work at Itasca State Park..... 223
Hansen, Prof. N. E., Some New Fruits Originated, etc..... 443
Hansen, Prof. N. E., Thoughts on Breeding of Hardy Fruits..... 326
Haralson, Chas., Minnesota State Fruit Breeding Farm..... 81
Haralson, Chas., Work at the State Fruit Breeding Farm..... 375
Harris, F. I., Midsummer Report, LaCrescent Trial Station..... 251
Harrison, C. S., The Ponderosa, or Bull, Pine..... 458
Hendrum Trial Station, Ole J. Hagen..... 246
Homer Cherry Record in S. E. Minn., W. A. Yahnke..... 26
Horticulture at the Minnesota State Fair, 1909, A. W. Latham..... 389
Huston, H. A., How to Raise More Fruit and Less Wood..... 348

I

Improvement Work, Fourth Season in, Mrs. Anna B. Underwood..... 126
In Memoriam, Nils Anderson 117
In Memoriam, A. D. Leach 281
In Memoriam, Frank Moeser 277
In Memoriam, William Russell 278
Iowa State Horticultural Society, Annual Meeting, 1908, Prof. Le Roy Cady.... 72
Itasca State Park, Summer Work at, Carl Hamilton..... 223

J

Jeffers Trial Station, Dewain Cook 58
Jeffers Trial Station, Dewain Cook 248
Johnson, Gust, How to Grow Blackberries with Success in Minnesota..... 121
Johnny Appleseed, The Pioneer Orchardist, Rev. E. F. Pabody..... 417
Journal Annual Meeting, 1909 481

K

Kandiyohi Co. Hort. Soc'y, An. Rep., 1908, C. C. Selvig..... 211
Katzner, Rev. Jno. B., Annual Report, Collegeville Trial Station..... 45
Katzner, Rev. Jno. B., Midsummer Report, Collegeville Trial Station..... 242
Kellogg, Geo. J., Strawberries—a question exercise..... 355
Kenney, S. H., Annual Report, Waterville Trial Station..... 67
Kenney, S. H., Midsummer Report, Waterville Trial Station..... 254
Kimball, F. W., A Ten Years' Experiment in Top-Working..... 380
Kimball, J., Annual Report, Northeastern Minnesota Horticultural Society, 1908, 212
Kimball, Rev. J., The Fascination of Amateur Bee-Keeping..... 213
Kohler, A. R., Spraying Calendar for Minnesota Fruit Growers..... 133

L

La Crescent Trial Station, F. I. Harris..... 251
Latham, A. W., Annual Meeting, 1908..... 1
Latham, A. W., Horticulture at the Minnesota State Fair, 1909..... 389
Latham, A. W., Secretary's Annual Report, 1908..... 17
Latham, A. W., Summer Meeting, 1909..... 269
Leach, A. D., In Memoriam 281
Legal Protection for Planter and Grower, Wm. T. Coe..... 412
Library, Additions to Society 527
Life Members, List of 525
Life Members, Honorary, List of 506
Loyhed, Mrs. Edgar H., Distributing Apple Trees via the Woman's Club..... 361
Lyman, A. B., Annual Report, Excelsior Trial Station..... 50

M

Marshall, G. E., Fires in Our National Forests..... 427
Meyer, E., Outdoor Roses and How to Grow Them..... 228
Midsummer Trial Station Reports, 1909..... 241
Minnesota State Rose Soc'y, An. Rep., 1908, Mrs. F. H. Gibbs..... 208

Digitized by Google

INDEX.

Minn. State Rose Soc'y, An. Address, Mrs. D. W. C. Ruff..... 206
Moeser, Frank, In Memoriam 277
Montevideo Trial Station, L. R. Moyer..... 61
Montevideo Trial Station, L. R. Moyer..... 252
Moyer, L. R., Annual Report, Montevideo Trial Station..... 61
Moyer, L. R., Midsummer Report, Montevideo Trial Station..... 252

N

National Apple Show, Mrs. D. W. C. Ruff..... 118
Nebraska Sand Hills, Afforestation in the, C. L. French..... 342
New Fruits, Growing, Prof. S. B. Green..... 299
N. D. State Hort. Soc'y, An. Rep., 1908, O. O. Churchill 209
N. D. State Hort. Society, Annual Meeting, 1909, O. J. Hagen..... 106
N. E. Ia. Hort. Soc'y, An. Meet., 1908, Robert C. Wedge..... 204
N. E. Minn. Hort. Soc'y, An. Rep., 1908, J. Kimball..... 212
Norway Poplar, The Economic Value of the, Emil Sahler..... 293
Nursery Stock, The Distribution of, Col. C. W. Gurney..... 307
Nussbaumer, Fred, Public Square in the Prairie Village..... 304

O

Officers, 1909 319
Official Reports 16
Orchard Notes, etc., S. D. Richardson..... 315
Orcharding in Fillmore County, Development of Commercial, C. E. Snyder..... 23
Owatonna Trial Station, Thos. E. Cashman..... 65
Owatonna Trial Station, Thos. E. Cashman..... 253
Owen, S. M., Canada's Fruit Package Law..... 287
Owen, S. M., Work of the Minnesota State Forestry Association..... 340

P

Pabody, Rev. E. F., Johnny Appleseed, The Pioneer Orchardist..... 417
Package Law, Canada's Fruit, S. M. Owen..... 287
Package, Uniformity in Fruit, R. A. Wright..... 282
Parks, John S., In Memoriam 235
Patten, Chas. G., Breeding New Fruits by Crossing and Selection..... 330
Paynesville Trial Station, Frank Brown..... 254
Peonies from Seed, O. H. Brand..... 257
Perennials in Manitoba, The Growing of, Dr. H. M. Speechly..... 321
Peterson, O. M., Sixteenth Annual Meeting, Southern Minnesota Hort. Soc'y... 107
Philips, A. J., Top-Working Notes from a Long Experience..... 423
Picking and Marketing Apples for the Local Market, P. H. Frye..... 367
Plant-Breeders' Auxiliary, An. Address, J. M. Underwood..... 217
Plant-Breeders of Minnesota, A Year with the, Clarence Wedge..... 169
Pond, H. H., What Spraying Has Done for Me..... 33
Ponderosa, or Bull, Pine, The, C. S. Harrison..... 458
Prairie Plantations, J. P. Wentling 382
Premiums, Award of, Minnesota State Fair, 1909..... 432
President's Annual Address, Prof. S. B. Green..... 10
Program, Annual Meeting, 1909 476
Pruning in the Nursery, Henri Theibault 260
Pruning the Orchard, When, How and Why, Dewain Cook..... 376
Pruning Shade Trees, etc., Theo. Wirth..... 453
Public Square in the Prairie Village, Fred Nussbaumer..... 304

R

Redpath, Thos., Vice-President's Report, Fifth Congressional District..... 95
Reed, A. H., Annual Report, Glencoe Trial Station..... 52
Reed, A. H., Midsummer Report, Glencoe Trial Station..... 244
Reed, Capt. A. H., Biography of..... 441
Reforesting a Sand Hill—a discussion..... 437
Richardson, C. L., Some Suggestions for the Strawberry Grower..... 369
Richardson, S. D., Orchard Notes, etc..... 315
Robertson, Prof. Wm., Vice-President's Report, Ninth Congressional District... 105
Roses and How to Grow Them, Outdoor, E. Meyer..... 228
Rowell, H. H. S., Annual Meeting, Washington State Hort. Society, 1908..... 75
Ruff, D. W. C., The Dahlia 405
Ruff, Mrs. D. W. C., Annual Address, Minnesota State Rose Society..... 206
Ruff, Mrs. D. W. C., National Apple Show..... 118
Ruff, Mrs. D. W. C., A Woman in a Vegetable Garden..... 394
Ruggles, Prof. A. G., Spraying for the Plum Curculio..... 138
Russell, Wm., Foul Brood a Menace to Bee-Keeping..... 387
Russell, Wm., In Memoriam 278

S

Sahler, Emil, The Economic Value of the Norway Poplar..... 293
Sauk Rapids Trial Station, Mrs. Jennie Stager..... 66
Schutz, R. A., Annual Meeting Western Horticultural Society, 1909..... 168
Secretary's Annual Report, 1908, A. W. Latham..... 17
Secretary's Corner 38, 79, 120, 160, 199, 240, 279, 320, 360, 399, 440, 480
Seed, Strawberries from, Prof. S. B. Green..... 276
Seed, Variation in Trees from, Clarence Wedge..... 276
Seeds, Improvement of Garden, G. D. Black..... 187

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INDEX.

Selvig, C. C., Annual Report, Kandiyohi County Horticultural Society, 1908.... 211
Selvig, C. C., Vice-President's Report, Seventh Congressional District..... 100
Small Fruit Culture in the Pine Regions of Minnesota, A. B. Coleman..... 35
Snyder, C. E., Development of Commercial Orcharding in Fillmore County.... 23
Smith, E. A., Annual Meeting, Wisconsin State Horticultural Society, 1909.... 77
Smith, E. A., Bulbs and Plants for Fall Planting..... 335
Snyder, Prof. Harry, A Demonstration in Soils..... 175
Soils, A Demonstration in, Prof. Harry Snyder..... 175
So. Minn. Hort. Society, Sixteenth Annual Meeting, O. M. Peterson..... 107
So. Minn. Hort. Society, Notes on Meeting of, S. H. Drum..... 108
Speechly, Dr. H. M., The Growing of Perennials in Manitoba..... 321
Spraying Calendar for Minn. Fruit Growers, A. R. Kohler..... 133
Spraying Notes, Prof. F. L. Washburn..... 136
Spraying for the Plum Curculio, Prof. A. G. Ruggles..... 138
Spraying Mixtures, The Preparation of, A. Brackett..... 147
Spraying Has Done for Me, What, H. H. Pond..... 33
Spray? Does it Pay to, Carl G. Steller..... 151
Stager, Mrs. Jennie, Annual Report, Sauk Rapids Trial Station..... 66
Steller, Carl G., Does it Pay to Spray?..... 151
Stewart, Prof. John T., Drainage at the State Fruit-Breeding Farm..... 263
Strand, Geo. W., Treasurer's Annual Report, 1908..... 22
Strawberry Grower, Some Suggestions for the, C. L. Richardson..... 369
Strawberries—a question exercise, Geo. J. Kellogg..... 355
Summer Meeting, 1909, Notice of..... 238
Summer Meeting, 1909, A. W. Latham..... 269
Superintendents of Trial Stations, 1909..... 319

T

Theibault Henri, Pruning in the Nursery 260
Top-Working, A Ten Years' Experiment in, F. W. Kimball..... 380
Top-Working Notes from a Long Experience, A. J. Philips..... 423
Treasurer's Annual Report, 1908, Geo. W. Strand..... 22
Trial Station Reports 41
Two Minute Talks 466

U

Underwood, J. M., Annual Address, Plant Breeders' Auxiliary..... 217
Underwood, Mrs. Anna B., Fourth Season in Improvement Work..... 126
Unselfish and Useful Work, Prof. S. B. Green..... 116

V

Vegetable Garden, A Woman in a, Mrs. D. W. C. Ruff..... 394
Vegetable Gardening, Glass as an Adjunct to, F. H. Gibbs..... 201
Vegetables and Their Uses, The Unusual in Garden, J. Vincent Bailey..... 110
Vice-President's Annual Reports, 1908..... 87
Vice-President's Report, First Cong. Dist., S. H. Drum..... 87
" " " Second Cong. Dist., John Bisbee..... 91
" " " Third Cong. Dist., C. H. Andrews..... 93
" " " Fifth Cong. Dist., Thos. Redpath..... 95
" " " Sixth Cong. Dist., A. Wilwerding 96
" " " Seventh Cong. Dist., C. C. Selvig..... 100
" " " Eighth Cong. Dist., S. P. Crosby..... 102
" " " Ninth Cong. Dist., Prof. Wm. Robertson..... 105

W

Washburn, Prof. F. L., Spraying Notes..... 136
Washington State Horticultural Society, Annual Meeting, 1908, H. H. S. Rowell. 75
Waterville Trial Station, S. H. Kenney..... 67
Waterville Trial Station, S. H. Kenney..... 254
Wedge, Clarence, A Year with the Plant Breeders of Minnesota..... 169
Wedge, Clarence, Evergreens 161
Wedge, Clarence, Notes on Apple Trial List..... 448
Wedge, Clarence, Report on Minnesota State Fruit Breeding Farm..... 84
Wedge, Clarence, Variation in Trees from Seed..... 276
Wedge, Robert C., Annual Meeting, Northeastern Iowa Hort. Society, 1908.... 204
Wentling, J. P., Prairie Plantations 382
Western Horticultural Society, Annual Meeting, 1909, R. A. Schutz..... 168
West Concord Trial Station, F. J. Cowles..... 70
West Concord Trial Station, F. J. Cowles..... 256
Wilwerding, A., Vice-President's Report, Sixth Congressional District..... 96
Wirth, Theo., Pruning Shade Trees, etc..... 453
Wisconsin State Horticultural Society, Annual Meeting, 1909, E. A. Smith..... 77
Wright, R. A., Uniformity in Fruit Package..... 282

Y

Yahnke, W. A., Homer Cherry Record in S. E. Minnesota..... 26

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